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(71) Applicant: REISMAN, Richard [US/US]; Apartment 14K, 20 East 9th Street, New York, NY 10003 (US).

(74) Agent: HANDAL, Anthony; Handal & Morofsky, 80 Washington Street, Norwalk, CT 06854 (US).

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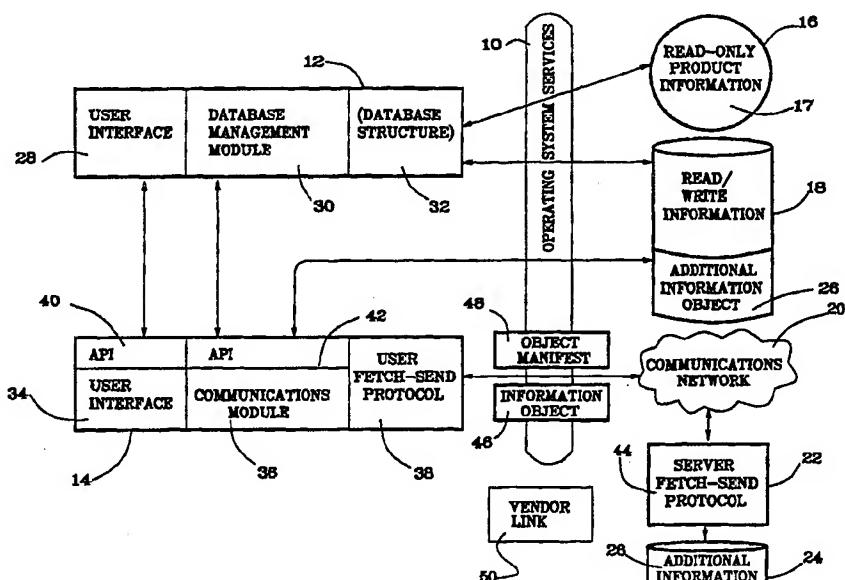
(57) Abstract

A novel electronic information transport component (14) can be incorporated in a wide range of electronic information products, for example magazine collections, to automate the mass distribution of updates, such as current issues, from a remote server to a wide user base having a diversity of computer stations. Advantages of economy, immediacy and ease of use are provided. Extensions of the invention permit automated electronic catalog shopping with order placement and, optionally, order confirmation. A server based update distribution service and a sponsor pricing system for the Internet, or the like, is also provided.

-1-

COMPUTER-IMPLEMENTED TRANSPORT OF ELECTRONIC INFORMATION OBJECTS

TECHNICAL FIELD

5   The present invention relates to computer-implemented transport
of electronic information objects, employing information
transport software to transporting information objects between a
remote server and any one of multiple, uncoordinated intelligent
computer workstations. The invention provides a product-
10   embeddable computer-implemented software component for
distributing information objects from a remote source to a large
number, or mass market of customers or subscribers, and a
computer on which said component is implemented.

15   BACKGROUND
Electronic publication is an exploding industry in which
thousands of new products including magazines and periodicals,
software applications and utilities, video games, business,
legal and financial information and databases, encyclopedias and
20   dictionaries are purchased by millions of customers. Commonly,
such information products are replicated in computer-readable
form on magnetic or optical storage diskettes and are box-
packaged with printed manuals for distribution to retail stores
and direct mail sales. Such distribution methods suffer the
25   drawbacks of taking time and being relatively expensive. Time
lags of days or weeks to get a product into a consumer's hands
once it is created are inherent. Reference material on a CD-ROM
is usually out-of-date by the time the user receives a new disk.

30   Such drawbacks may be acceptable for original, high value
products such as software applications or collections of
publications, for example, NEWSWEEK® Interactive CD-ROM, or
disks, which provides a searchable audio-visual library of
issues of NEWSWEEK magazine and CINEMANIA® CD-ROM which provides
35   reviews and other information on newly released films or movies.
However, no convenient means exists for distributing time-
sensitive, low-value updates to such products, for example, the

SUBSTITUTE SHEET (RULE 26)

5   latest issue of Newsweek or last week's movie reviews, which by
     themselves may have a rather modest value. Distribution in
     stored form, on physical media,such as diskette, is slow and too
     expensive for a mere update.

10   To solve the problems of timeliness and low cost, electronic
     distribution from a central computer server to a subscriber's
     computer over common carriers or wide area networks is
     attractive. Such direct electronic distribution does not solve
     the problem of incorporating the received material with the
15   original material so that a fully integrated publication,
     information database or software program is obtained by the
     user.

     Another class of electronically distributed information product
20   comprises home shopping catalogues of mail order products
     distributed on optical or other digital data storage disks which
     may contain text, sound and images from printed catalogues or
     uniquely created material, for example software application
     demos. To applicant's knowledge and belief, available products
25   lack direct computer order placement capabilities, and require
     orders to be placed by voice call for example to a toll-free 800
     number, after selections are made from an electronic catalog.

     Communication between remote computers, not directly
30   interconnected by umbilical cable or a wired network, is enabled
     by a wide range of hardware devices and software drivers,
     utilities, applications and application modules. Telephone
     modems that couple a computer with the telephone network are
     familiar devices. RF modems that couple computers into wireless
35   networks are less familiar but are beginning to appear in
     consumer devices known broadly as personal information
     communicators (PIC's) of which personal digital assistants
     (PDA's) such as Apple Corp.'s NEWTON® product are a first
     generation. New kinds of digital communications devices can be
40   expected to emerge as digital technology replaces analog
     transmission.

SUBSTITUTE SHEET (RULE 26)

-3-

General-purpose, online, modem-accessed, electronic information
services, such as PRODIGY, COMPUSERVE and AMERICA ONLINE
(trademarks), and some Internet services, provide widely
available access to timely information products from a central
server, but are limited and complex. They provide no means for
the integration of downloaded information with information
products offered on disk or CD, and provide only rudimentary
facilities for local viewing and search of downloaded files.
Also they impose their interface on users which would prevent a
publisher displaying their own proprietary interface, or
appearance via the service. Also, online services impose
payment and signup requirements on would-be users which may be
too expensive or cumbersome for many publishing projects.

Communications Products

Off-the-shelf communicatins software, for example, Datastorm
Technologies, Inc.'s PROCOMM (trademark) and CENTRAL POINT
COMMUTE (trademark) from Central Point Software, Inc. are
commonly used to provide a variety of functions, including file
transfers between, interactive sessions from, host-mode services
from, and remote computer management of, modem-equipped personal
computers wired into the telephone network. Many such products
with different versions and functions are in use. A publisher
cannot know which particular product every customer has. Such
products are too rich and expensive to provide freely with many
information products a publisher wishes to distribute.

Counterpoint Publishing's Federal Register publications

Counterpoint Publishing, (Cambridge MA) in brochures available
to applicant in November 1993 offered electronic information
products entitled "Daily Federal Register" and "CD Federal
Register". "Daily Federal Register" includes communications
software and a high-speed modem. These are complex, expensive
products customized for users of the Federal Register and not
suitable for widespread application.

Apparently, the included communications software is a standard
general purpose communications package with dialing scripts that
are customized to the needs of the Federal Register products.

SUBSTITUTE SHEET (RULE 26)

-4-

5   Accordingly, the cost of a communications package license which
      may be as high as about $100 at retail must be included with in
      the product cost. Also, Counterpoint Publishing appears to
      require the customer to buy its own own customized modem, with
      the product, building in a cost (about $100-200) which renders
10   this approach quite unsuitable for mass-market distribution of
      low cost electronic information update products. Nor is the
      resulting product seamless either in its appearance or its
      operation because the communications software is separately
      invoked and used, and has its own user interface with a
15   disparate look and feel from that of the information product
      itself. These are expensive products that neither provide nor
      suggest solutions to electronic publishers problems of economic
      and timely mass distribution of product.

20   The "CD Federal Register" provides the Federal Register on CD-
      ROM at weekly intervals for $1,950.00 annually and CD-ROM disks
      are shipped to customers as they become available. Back issues
      are $125 each. Updates are provided by shipping a disk.
      While the two product "CD Federal Register" and "Daily Federal
25   Register" might be used together, at an additive cost, to
      provide a combination of archives on CD-ROM plus, daily updates
      obtained and stored until replaced by a new CD-ROM, based on
      information available to the present inventor it appears that
      the two products lack integration feaures and must be used
30   separately.

Xcellenet's "REMOTEWARE"®
      Xcellenet Inc. in product brochures copyrighted 1992 and a price
      list dated August 16, 1993, for a "REMOTEWARE"® product line,
35   offers a range of REMOTEWARE® software-only products providing
      electronic information distribution to and from remote nodes of
      a proprietary REMOTEWARE® computer network intended for use
      within an organized, corporate or institutional data processing
      or management information system. Although feature-rich, the
40   system is primarily server directed, rather than user initiated
      and requires an expensive program (priced at $220.00) to run at
      the user's node whereas the present invention addresses consumer
      uses which will support costs of no more than a few dollars per

SUBSTITUTE SHEET (RULE 26)

-5-

5   user. REMOTEWARE® is too costly and complex for mass
     distribution of updates to periodicals, cannot be shipped
     invisibly with an electronic information product and requires
     specialized server software and operations support that would
     challenge all but the largest and most technically sophisticated
10   publishers. Accordingly, REMOTEWARE® is unsuitable for
     widespread use as an economical means of distributing updates
     for a variety of electronic information products.

     At the date of this invention, such a customer base will
15   normally include an extensive variety of computers, operating
     systems and communications devices, if the latter are present,
     all of which may have their own protocols and configuration
     requirements.

20   While an electronic information product vendor might consider
     licensing or purchasing an existing commercial communications
     product for distribution with their publication product to
     enable remote, diskless updating, the high cost of such a
     solution would generally be unacceptable because a communication
25   package includes a broad range of functionalities not required
     for the vendor's particular purpose, for example, remote
     keyboarding. Significantly, a commercial communications package
     is not susceptible to customization of its user interface and
     may have its own configuration requirements and installation
30   requirements, with regard to directories, device drivers and the
     like, which are incompatible with other vendor or user
     requirements or are simply a nuisance to the user. Thus, a
     commercial communications product in addition to its cost,
     cannot be satisfactorily integrated with an information product.
35
     There is accordingly a need for computer-implementable
     information transport software to enable simple, economical and
     prompt mass distribution of electronic information products.
     Furthemore, the mass market of computer users has a need for a
40   computer system or station which is capable of promptly and
     economically obtaining updates of information products and of
     integrating them with the original product.

SUBSTITUTE SHEET (RULE 26)

-6-

SUMMARY OF THE INVENTION

The present invention solves the problem of meeting these needs.
On the one hand, it solves the problem of enabling simple,
economical and prompt mass distribution of electronic
information products to a wide customer base that may number
tens or hundreds of thousands, and in some cases, millions of
consumers.

The invention solves this problem by providing a computer-
implemented information transport software module usable with
any of multiple electronic information products for mass
distribution of electronic information objects to users of a
diversity of uncoordinated communications-equipped computer
stations. The information transport software module is readily
customized to an individual information product to have a user
interface in said information product for activation of
automated transport of an information object between a remote
object source and a user's computer station. The information
transport module contains user communications protocols
specifying user station functions of the automated object
transport and the object source is supplied with source
communications protocols specifying source functions of the
automated object transport. The source communications protocol
is co-operative with the user communications protocol and knows
the characteristics of the user communications protocol, so as
to be able to effect the information object transport in
unattended mode after initiation.

In a valuable embodiment, the transporter contains multiple
routing and protocol data enabling it to communicate with the
remote source via any one of a number of pathways, e.g.
Internet, online, wide-area network or direct dial to the
server, possibly using an 800 number, depending upon the
facilties it finds at the user. Preferably, the transporter
selects the most efficient pathway available.

In a preferred embodiment, for economy and simplicity, the
information transport component is supplied for incorporation in
an information product as a free-standing embeddable component

SUBSTITUTE SHEET (RULE 26)

-7-

5   comprising only such functionality as is required for the
     information object transport operation as described herein.
     By limiting its functionality to predetermined transport
     operations, for example to information object transport between
     the user's address and one or more pre-specified remote
10   addresses, or to transport of a pre-specified information object
     or objects, or by making both such limitations, a lean and
     efficient information transporter product can be provided. This
     enables an information product vendor to supply an automated, or
     unattended, update or other information transport facility to a
15   mass market of computer users without the complexity and expense
     of proprietary network or communications software packages, or
     of the vendor developing their own transport software.

     Typical communications equipment comprises a modem, but other
20   cards and devices enabling remote communication between
     computers may be used, such as devices or means permitting
     communication in a digital rather than analog realm, for
     example, ISDN or ATM interfaces when they become commercially
     viable.
25
     Preferably, the user communications protocols specify parameters
     such as a source address, which may be a common carrier address,
     such as a telephone number, and object parameters such as file
     name or names, file size, location content and format are
30   specified, as appropriate, in either the user communications
     protocols or the source communications protocols, or both. Such
     object specification can be listed in an object manifest stored
     at the user's station, which preferably, for better control of
     the transport operation, is sent to the remote object source as
35   a verifier.

     By pre-specifying the desired transport functions to both ends
     of the transport operation, the user and the object source, a
     simplified, easy-to-use, automated transport operation which
40   conveys an information object in unattended mode, after
     initiation, can be provided to any user.

SUBSTITUTE SHEET (RULE 26)

-8-

5   The inventive information transport module provides an
     information product vendor with simplicity, modularity and
     generality enabling information fetch operations to be easily
     executed by novice users, and permitting inclusion in a wide
     range of information products with a minimum of customization.
10   The invention is accordingly most suitable for electronic
     publishers to employ to enable their customers easily to update
     information products such, for example, as periodical
     collections, patent collections or software furnished on
     optical, magnetic or other storage devices.
15

     In a preferred embodiment of the invention, the information
     object is pre-identified and integratable with the information
     product to which the transport module is customized to provide
     an augmented information product and the information transport
20   component comprises:
         a) a fetcher module configured to fetch said pre-identified
             object from said object source employing a pre-specified
             common carrier address stored in said fetcher module;
         b) a communications manager to establish and manage connection
25   to said object source under control of said fetcher module
             and with the assistance of said user and source
             communications protocols; and
         c) a fetched object integrator to locate a fetched object in a
             preset file area accessible to and known to said containing
30   information product;
     wherein said object pre-identification, said common carrier
     address and said preset file area specifications are stored in
     said software component, whereby a workstation user of said
     information product can automatically effect transport and
35   integration of a pre-identified object from said object source
     to create an augmented information product at said workstation.

     In this embodiment, any user can, easily and with varying
     degrees of automaticity, up to complete automation after
40   initiation of transport or upon arrival of a scheduled transport
     time, obtain an update object and smoothly integrate it with an
     original product or product shell.

SUBSTITUTE SHEET (RULE 26)

-9-

5   In a highly automated embodiment a containing information
     product, complete with transporter, is pre-coded with an update,
     reporting, or other schedule and, referencing the user's system
     clock, prompts the user for initiation of a transport operation
     at a scheduled date after distribution of the containing
10   product, or fetches a schedule. If the user's system is shut
     down when the pre-scheduled date arrives, such prompt may be
     made at the first system boot or product use after that date.

     The invention provides a closed-ended information transport
15   operation between an information object source and any
     subscribing user, with no special commands or menu selections,
     which functions efficiently and, within the general parameters
     of an operating system's required environment, operates
     independently of the user's system configuration. Information
20   transport operations are carried out automatically between
     communications modules that know what to expect from each other,
     avoiding difficulties arising from open-ended communications
     with a wide variety of users employing a diversity of
     heterogenous systems.
25
     The invention extends to methods of distributing electronic
     information objects, as described herein.

     The inventive distribution software module and the original
30   information product are linked together to interact seamlessly.
     It is possible for transport of the update to proceed in a high
     level format facilitating integration of the update object with
     the original product, and the invention also provides methods
     and software for effecting such integration.
35
     A broad objective of the invention which can be fulfilled by the
     methods and products disclosed herein is to allow a computer
     user to fetch and use an information product update, or even an
     original information product for which they have previously
40   received a transporter kit, with a minimum of effort, and
     preferably with the impression that the fetch function is an
     integral capability of the information product itself, rather
     than being executed by a separate or separable component.

SUBSTITUTE SHEET (RULE 26)

-10-

5   Another objective is to enable information transport to be
     easily effected across any of a selection of media or carriers,
     desired by the containing information product supplier. To this
     end the information transport component can provide protocol
     selection means for selecting media for real time communication
10   between said user and said remote object source employing a
     selection from a set of open-ended network technologies and
     network providers, said communication means being selectable
     without substantive change to said containing information
     product.
15

     In preferred embodiments, after setup of a containing
     information product and a simple menu-selection enabling
     activation of a transport operation to occur immediately or at a
     subsequent date, or time, and subject to the occurrence of error
20   conditions, the information transport component effects the
     transport operation in an unattended manner, or without user
     intervention, through the steps of modem activation, dialing,
     network transit, handshaking with the object source, file
     specification, file importation, termination of the call and
25   return of control to the containing product.

     Preferably, additional steps such as sending back verification
     of receipt of the fetched file to the object source, inspection
     of the fetched object and comparison with a pre-existing
30   manifest for verification of object parameters, and any
     necessary unpacking and decompression are effected
     automatically, in an unattended manner without user
     intervention. For seamless use of the object, it is also
     preferred that application file specifications, any necessary
35   location or relocation of an object file or files, and any
     reindexing, index creation or other product integration function
     that is required to enable the user to utilize the fetched
     object harmoniously with the original information product, be
     performed automatically in unattended manner without user
40   intervention, or with minimal user confirmation that one or more
     steps of the procedure should be executed.
     Preferred embodiments of the information transport component can
     pack or unpack, compress or decompress, and send to or fetch

SUBSTITUTE SHEET (RULE 26)

-11-

5   files from specified locations. The transporter allows the
     containing information product to be set up automatically to
     effect high-level integration of indexes and navigational
     structures by letting the containing product have control when
     needed to import or export (and encrypt or decrypt) objects.
10

     Preferably, the transporter has no direct effect on the content
     of the data object. Such transparency is advantageous in
     avoiding interdependency between the transporter and possible
     use of novel data structures, encryption or copy-control
15   methods, or the like, by the containing product. For example
     the transporter need not know (and possibly jeopardize) any
     encryption technique.

     In preferred embodiments of the invention, the module is self
20   configuring and has the ability to scan the user's system, and
     preferably identifies the user's modem, or other system
     components or configuration software, and automatically set
     protocols such as the baud rate, bits parity and the like.
     Relevant auto-configuring capabilities and software that may be
25   employed in practicing the invention are offered or promised by
     Intel Corporation in a brochure entitled **"Intel Technology
     Briefing: Plug and Play"** copyrighted 1994, the disclosure of
     which is hereby incorporated herein by reference thereto.

30   Preferably, the novel electronic information transporter is
     seamlessly embedded in the containing product so that an end
     user is unaware that the transporter can exist separately from
     the containing product. However, it is a valuable feature of
     the invention that the transporter be separable from the
35   containing product to be usable with other containing products.

     New or improved electronic information products are made
     possible by the novel information transporter disclosed herein,
     for example, CD-ROM-based products updated from online services,
40   updatable periodical magazine collections, catalog-based
     computer shopping with order entry and optionally, order
     confirmation.

SUBSTITUTE SHEET (RULE 26)

-12-

5   **Recently contemplated CD-ROM products updatable from online
    services**

A CD-ROM-based product with online service updatability called
MICROSOFT Complete Baseball" (MICROSOFT is a trademark) was
10 announced by Microsoft Corporation apparently on March 1, 1994,
with a June 15, 1994 availability date. A product brochure
received by the present inventor on April 26 describes a
multimedia history of baseball which can be updated with daily
scores from an online service, by modem. Nothing in the sales
15 materials suggests any separable information transport
components marketable for use with other information products.

In late April 1994, **CompuServe**® (trademark) online information
service announced plans for a CD-ROM information product to be
20 used in conjunction with its online service. The CompuServe®
CD-ROM information product online service is usable only with
that service, and requires users of its online component to be
CompuServe® member/subscribers, on terms such as described
above, which terms restrict the CD-ROM product's marketability.
25 The CD-ROM content and user interface is limited to that
provided by CompuServe®. Accordingly, such a dedicated CD-ROM
service is not a satisfactory solution to independent publishers
looking for economical update means, because they will be
limited to whatever user interface and data management
30 flexibility the online vendor may provide which will
substantially restrict any creative look-and-feel identity the
publisher may have provided in their own product. Thus the CD-
ROM product is described by CompuServe® in the statement: "It
is, essentially, a new window on CompuServe..." This product
35 description does not suggest an ability to obtain updated online
information for integrated local, offline use with an original
information product stored on the CD-ROM, as is provided by the
present invention.

40 In addition to CD-ROM-based products, various new information
distribution methods and services are made possible by
embodiments of the present invention. The object source can be
a remote server equipped with a cooperative communications
module closely molded to work effortlessly with the information

-13-

5   transporter for distributing objects to a wide base of users.
     Such a remote server can be linked to a vendor or gatewayed to
     other information object sources or electronic publishers, and
     exploit its smooth and efficient information transport
     capabilities to act as a distribution point for such vendors,
10   sources or publishers.

     Thus, the invention further comprises such a special-purpose
     server designed for use with the novel information transporter
     and the special-purpose server can be established as a
15   distribution service for publishers who incorporate the
     information transporter in their products. The invention also
     provides a method of operating a server to provide such a
     software service and server-enabling software.

20   **BRIEF DESCRIPTION OF THE DRAWINGS**
     One way of carrying out the invention is described in detail
     below with reference to drawings which illustrate only one
     specific embodiment of the invention and in which:-
              Figure 1   is a schematic diagram of one embodiment of an
25   information transport software component
                            according to the invention installed in a
                            computer workstation and communicating with a
                            complementary centrally located server-resident
                            software module for mass distribution of
30   digitized electronic information objects;
              Figure 2   is a flow block diagram of an information
                            transport operation performed by the software
                            component and module of the embodiment of Figure
                            1;
35   **Figure 3**   is a schematic diagram of a server-based
                            electronic distribution service employing an
                            inventive information transport software
                            component;
              Figure 4   is a further schematic diagram of the service
40   illustrated in Figure 3;
              Figure 5   is a schematic diagram of a prior art
                            communications product employed to transport an
                            information object between a user and a remote

SUBSTITUTE SHEET (RULE 26)

-14-

5   server; and

    Figure 6   is a schematic diagram similar to Figure 5
                     showing, in a comparative manner, some of the
                     benefits that can flow to a user when an
                     information transport software component, such as
10   that described with reference to Figure 1, is
                     used for a similar transport operation.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

    Referring to Figure 1, the inventive software component is
15 schematically shown in operative mode installed at a user's
    computer workstation. The workstation is communications-
    equipped for communication with remote services, for example by
    modem, which services are also shown schematically. Only
    relevant software and hardware components of the system are
20 shown.

    Relevant components at the workstation comprise operating system
    services 10, a containing information product 12, an information
    transport component or module 14, herein also referenced as a
25 "transporter" which may be a stand-alone product or, in
    preferred embodiments is embedded or contained in the containing
    information product 12. Information transport component 14
    provides a general purpose facility for sending and fetching
    information objects between an end user's computer (the client)
30 and a central server. Information transport component 14 is not
    customized to the containing information product 12,
    but is intended to be used in conjunction with any of a wide
    range of electronic information products.

35 Operating system services 10 provide capabilities for the
    containing information product 12 and the information transport
    component 14 to access a readable information storage device 16
    which may, for example, be an optical disk drive such as a read-
    only CD-ROM where product information 17 is stored. In
40 addition, a read/write information storage device 18, for
    example, a conventional hard disk is accessed via the operating
    system services 10 for storage of a fetched additional
    information object 26.

SUBSTITUTE SHEET (RULE 26)

-15-

5   As necessary, different, or modified, information transporter
    components 14 can be supplied for users of different operating
    systems or system families, notably DOS (available in several
    versions, for example from Microsoft Corp, IBM Corporation,
    Novell, Inc.) Windows (trademark, Microsoft Corp.), Apple
10 Computer Corp.'s operating systems, possibly IBM Corporation's
    OS/2 (trademark), and any distinct operating systems developed
    for personal digital assistants, pen-based computers and the
    like.

15 Information transport component 14 also uses operating system
    services 10 for external communication with a communications
    network 20 through which the information transport component 14
    can access a remote server 22, or server-client network,
    supporting a data storage device 24 where desired additional
20 information object 26 is located.

    Communications network 20 can be any electronic distribution
    system suitable for transporting information objects 26
    including wired and wireless common carriers such as telephone
25 networks, cable television systems or networks and mobile
    telecommunications or data communications networks and extends
    also to emerging and future systems of providing electronic
    communication between users of diversified equipment. The term
    "common carrier" is used herein to embrace all such data
30 communication systems as will reasonably meet the purposes of
    the invention. The term "modem" is used herein to embrace any
    network interface device enabling a user station to communicate
    on such a communications network 20.

35 While the containing information product 12 can take many
    different forms, as described herein, and as will also be
    apparent to those skilled in the art, a preferred embodiment is
    that of a periodically issuing publication or publications, for
    example, a news magazine or a collection of patents. Again, the
40 additional information object 26 could be any information of
    interest to the user, having some relevance to the containing
    information product 12, but the invention and its unique
    capabilities enable the additional information object 24 to be

SUBSTITUTE SHEET (RULE 26)

-16-

5 fully integrated with the containing product 12 in a manner that
   can be automated to be transparent to the user.

   The inventive information transport component 14 is designed to
   require a minimum of user input. A bare minimum will be a user's
10 ID which can be entered by the user in a product setup and
   automatically accessed for information transport, or could by
   pre-loaded by the vendor from data supplied by the user at
   purchase.

15 A product ID is preferably pre-loaded into the containing
   information product 12 by the information product vendor or
   publisher to be available for use by the information transport
   component 14. However, even this may not be required. In an
   alternative embodiment, the product ID can be automatically
20 incorporated into the product in a product replication process
   that permits individualized coding of unique ID's. In most
   cases, a user-actuated menu selection is provided in the
   containing information product 12 after integration with the
   inventive information transport component 14 to activate
25 transport of an additional information object, and preferably,
   selection of transport activation drops down a menu of transport
   choices such as "FETCH UPDATE", "FETCH CATALOG OF UPDATES",
   "SEND DATA" and the like, each of which then runs automatically
   upon selection.
30
   Updating can also be totally automatic, and other than an
   obviously desirable user notification, be completely invisible
   to or transparent to the user, running in background on their
   system, while the user's screen is available for other
35 processing such as running the containing information product
   12. Where updates are made available on a known schedule, a
   totally automated product can be provided that fetches an update
   without any user intervention, on the specified release date, or
   as soon thereafter as the user's system, or the containing
40 information product 12, is activated. In practice, most users
   will probably prefer an opportunity to confirm that the fetch
   transaction should proceed. A preferred embodiment monitors the
   user's system clock and alerts a user to the arrival of an

-17-

 5   update release date and asks the user to confirm that the system
      should seek and fetch the scheduled update, if available.

      Thus, the invention is particularly suitable for importing
      updates of information or information processing products, such
10   as periodically issuing literature, or software upgrades.
      Accordingly, additional information object 24 preferably
      comprises updates which can be integrated with the information
      product 12 to provide, for example, a coherent body or
      continuous sequence of materials that can be commonly searched
15   and indexed preferably in a manner giving the user the
      appearance of a common logical file formed from physically
      distinct files. The appearance of integration can be achieved
      by searching new and then old indexes in series and making the
      search and navigation logic of the containing product smart
20   enough to combine new and old information. For example a new
      object can have an index file similar to that for the original
      information product 12. A search engine can first search the
      new index, then the old one, and then produce a combined set of
      results. Preferably, the files are not actually merged or
25   otherwise combined as to do so could be unduly complex.

      As shown in Figure 1, the containing information product 12
      comprises a user interface 28 enabling the user to view, search,
      excerpt and print or otherwise export or process selected
30   information items from product information 17. The user
      interface 28 provides standard information product features, as
      conventionally supplied by the product publisher, supplemented
      by appropriate fetch or send options to activate the features of
      the inventive information transport component 14.
35
      Also shown in Figure 1 are a database management module 30 and a
      data structure definition module 32. Database management module
      30 provides retrieval-oriented database processing of the
      information product including indexed searching and selective
40   retrieval capabilities using one or more index keys such as an
      issue or item number, or full text searching, and may provide
      hypertext and hypermedia linkages. The data structure
      definition 32 provides the database structure of relevant files

SUBSTITUTE SHEET (RULE 26)

-18-

5   as classified by field or element, name, type, size and the
       like. After successful completion of a fetch operation, control
       is returned to containing information product 12 to process the
       new information in essentially the same manner as the original
       information, or in any other manner for which it has been
10   equipped.

       Major modules comprised in the inventive information transport
       component 14 are a user interface 34, a communications module 36
       and fetch-send protocol 38. In addition, the information
15   transport component 14 preferably comprises its own built-in
       application programming interfaces (APIs) such as a user
       interface API 40 and a communications API 42, enabling the
       information transport component 14's user interface and
       communications modules respectively, readily to be incorporated
20   with, or plugged into a wide range of containing information
       products 14. Such incorporation, in the currently best known
       embodiment of the invention, is effected by software engineers
       familiar with and having access to the containing information
       product 12, but future developments may enable the incorporation
25   process to be effected by skilled users.

       References herein to an applications programming interface (API)
       will be understood to embrace any program interconnection
       technique which supports direct, seamless interaction between
30   one program and another, including prodedural calls, object
       encapsulation, or emerging techniques like Microsoft Corp.'s
       Object Linking and Embedding (OLE) or Apple Computer's Open Doc.

       API 40 is responsible for providing means for the user to
35   interact with the information transport functions of the
       invention and interface as seen by the user and API 42 is
       responsible for handling internal processes of communications
       and data management.

40   The APIs 40 and 42 are intended to enable the information
       transport component 14 to be used by a range of product programs
       controlling a variety of information products and to enable each
       API 40 and 42 to be free to exercise flexibility and creativity

-19-

5   in extending its associated user interface 28, data management
       module 30 and database structure 32 to fully address the
       provision of transport functions for the purposes described
       herein.

10   API 42 operates on a transport function level involving high
       level interactions between the containing product 12 or the user
       (or the optional user interface) and the transporter 14 before
       and after communications while the detailed low-level
       interactions between the transporter client and the server
15   during communications are handled by fetch-send protocol 38,
       without involvement of the containing product 12 or the user.
       "High level" is used to refer to a level at which software
       interacts with a user, typically in simple, readily
       comprehensible, function-oriented, graphic or everyday language
20   terms, while "low-level" refers to a level of detailed
       procedural interaction with an operating system, or device
       (modem, port etc.) in obscure program or machine language terms
       incomprehensible to most users.

25   Fetch-send protocol 38 is, in the preferred embodiment shown, a
       component of a novel client-server communications procedure
       designed to manage the transaction-oriented transmissions
       required to achieve satisfactory transport of desired server
       stored information objects, and optionally, central reporting of
30   user information in a predetermined format. Alternatively, one
       or more existing protocols could be used.

       Preferably, the API's 40 and 42 and the fetch-send protocol 38
       are structured to use a manifest list to control the exchange of
35   information objects. The manifest list can be provided in
       fetch-send protocol 38, and can be forwarded to remote server 22
       to provide better efficiency, error control, and management of
       the operation. Alternatively the manifest list may remain
       resident at the user's station. The manifest is valuable
40   operating at the client station, at the API level, to specify
       the actions required during a transport session and can in one
       embodiment comprise a list of send and fetch operations which
       are individually controlled.

SUBSTITUTE SHEET (RULE 26)

-20-

5   This software mechanism, employing novel communications
    procedures and applications interfaces that reference an object
    manifest, provides a new way for performing a wide variety of
    information exchange functions in a simple, standardized and
    economical manner.

10

    API Functions: 1) Product Setup
    In preferred embodiments, API 40 and API 42 include a product
    setup routine of an application-specific configuration, which is
    used by the publisher or product developer, prior to

15 publication, to establish seamless compatibility between the
    containing information product 12 and the information transport
    component 14 for smooth execution of desired transport
    functions. A completion status code is also specified.

20 The application-specific configuration posts user and product ID
    information, as needed to process password or other access code
    authentication and posts files information, including
    designation of an application work directory and a transporter
    work directory for performing the transporter functions of

25 information transport component 14.

    Additionally, the application-specific configuration sets up an
    appropriate decompression (or compression for send objects)
    technique according to the expected format and condition of

30 fetched information objects 46, which information is pre-coded
    into communications component 36.

    The application-specific configuration established through API
    40 selects either a standard user interface, as furnished with

35 information transport component 14, or an application-controlled
    user interface. Control settings are established for connection
    problem handling, disk error handling, abort and server
    condition handling, access denial, unavailability of information
    object files and any other error situations which may occur

40 during transport.

    If desired, optional, advanced controls for scheduled automatic
    calling can be included in the application-specific

SUBSTITUTE SHEET (RULE 26)

-21-

5   configuration used in preparing the containing information
     product 12 for publication.

     Preparation of containing information product 12 and
     incorporation of information transport component 14 therein,
10   with an application specific configuration, as described is
     carried out prior to publication to build a customized, ready to
     run version of the product with automated update capability.

     Communications API 42 establishes a product-specific transport
15   method choice list for selection of an appropriate file transfer
     protocol as between direct dial, data network dial, and other
     modes of transport. Communications protocols specify necessary
     connection parameters such as access number and network
     addressing or other routing information. Optional script choices
20   can provide for different modes of transport.

     These product-specific configurations and protocols enable
     information transport component 14 to be packaged in executable
     form with containing information product 12, with all necessary
25   product-specific components and settings, including a standard
     user interface if selected, ready for inclusion in the product
     package.

     If desired, at the option of the information product publisher,
30   a standard user interface may be included. Such an optional
     standard user interface can have all facilities needed to select
     transportable objects from a predefined list, perform all user
     setup functions, and invoke information object transport.

35   Additional options are standard software that would allow the
     user to search, view and print the transported objects totally
     independently of the user interface and database search
     components of the containing product. Both such options enable
     a publisher to exploit the inventive transport product for
40   efficiently and economically providing updates without having to
     make changes to the publisher's containing product, simply by
     configuring the transporter or information transport component
     14 and physically including it, and the optional components,

SUBSTITUTE SHEET (RULE 26)

-22-

5   within the containing product.

A standard viewer might handle only ASCII text, but it
preferably could provide for other useful formats such as
standard word processor, spreadsheet or database formats, or
10 multimedia formats such as video, sound and HTML (hypertext
markup language), a format becoming popular on the Internet.

API Functions: 2) User Setup
Compatibility with the user's system is effected by API 40
15 establishing a user-specific configuration, and creating or
updating the necessary control files.

Parameters established in the user-specific configuration
include a setup ID number to permit use of multiple setups, for
20 example, for different transport options, and a product ID
number.

The user-specific configuration posts user ID information and a
password or other access code authentication and posts files
25 information, including disk and drive designation for work and
data directories. Autocall options and a completion status code
are also specified.

API 40 provides information for communications module 36,
30 specifying a user communications protocol for the user's
hardware, operating system, line configuration, and so on.
Thus, for a standard telephone connection, comm port, speed
(baud rate), interrupt settings, modem type and control strings,
dial prefix, dial 9, pulse or tone, call waiting shut-off, and
35 the like are specified, as appropriate. Additionally, the user
communications protocol includes access number and connection
parameters, optionally with script selection for routing choices
via data networks, and so on.

40 The resultant user-specific configuration and communications
protocols generated through API 40 create a setup ready to call
and places it in the designated transporter work area. A
validation procedure checks entries and reports obvious errors

5   in parameter settings.

     Preferably, multiple product ID setups are provided to enable
     multiple information products to use the transporter with an
     appropriate, compatible transporter version. Preferably also,
10   the user-specific configuration accommodates shared use of the
     transporter work areas by multiple information product
     applications resident on the same user's system.

     Mechanism of fetch-send protocols 38 (user) and 44 (server)
15   User fetch-send protocol 38 working in cooperation with server
     fetch-send protocol 44 controls the desired information object
     transport function, calling remote server 22 and exchanging data
     objects. It performs or supervises communications between the
     user's system and remote server 22.
20

     Communications module 36 uses a setup ID number specified
     through API 40 or 42, selects which setup to use for a call,
     calls remote server 22 using protocol 38, and in a preferred
     embodiment, sends an object manifest comprising a send object
25   list, a fetch object list or both. Such manifest is created
     under control of user interface 28 from a pre-existing set of
     choices supplied with the product or obtained during previous
     update operations, or both.

30   Alternatively fetch-send protocol 38 may refer to a pre-existing
     manifest list stored at the user's station, or may be directed
     by remote server 22 to select one of multiple pre-existing
     manifest lists stored at the user's station. As another
     alternative, although it is convenient and advantageous to
35   transmit the manifest list to the server 22, the relevant status
     and management information can simply be used locally by
     communications module 36 and be integrated into the individual
     fetch and send protocols.

40   A send object list comprises object action codes specifying the
     type of server action required, if any, object names, object
     sizes and response object size, if any. A fetch object list
     comprises object names, object sizes and an object availability

-24-

5 date.

A completed object manifest is employed to convey the status of
the transport operation and to provide for additional
information transport, if desired. The completed object

10 manifest adds the following to the request object manifest: send
object additional information; object acceptance codes returned
by server 22; time of acceptance; and a response object name, if
called for by the object action code.

15 For a fetch operation, the completed object manifest adds the
following to the request object manifest: fetch object
additional information; a fetch confirmation or failure code;
the time of completion or failure and a revised availability
date if the requested fetch object was unavailable.

20

If a scheduled update or polling option is present and selected,
a scheduling or polling indicator is included, and a completion
of processing or import function to call through API 42 is
specified.

25

A completion status code terminates the fetch or send operation
and returns control to the information product application or
the provided user interface.

30 **Information transport using communications module 36**
Communications module 36 employing the described fetch-send
mechanism comprised by cooperating protocols 38 and 44 performs
the functions necessary to complete an information transport
operation, as described herein, under a variety of

35 circumstances, with tolerance for a common range of error
conditions, open drives, inadequate disk space, lost line
connections and the like, without losing control of the user's
system. Using correct, verified ID, naming and routing
information, the information transport operation employing the

40 inventive information transport component 14 is less error-prone
than many computer users would be were they effecting the
transport operation with conventional technology requiring them
to enter routing and storage information and the like, manually.

SUBSTITUTE SHEET (RULE 26)

-25-

5   Communications module 36 verifies that all send objects are as
       specified, that all fetch objects are scheduled to be available,
       verifies that sufficient disk space is available for all fetch
       objects and for compressed transmission copies of all objects,
       and returns an error report if any of these requirements is not
10   fulfilled.

       Communications module 36 performs communications, then returns a
       completed object manifest, and logs all activity in a
       transporter log file. If an optional scheduling/polling feature
15   is selected, the communication is deferred until the scheduled
       time.

       These general objectives are achieved by carrying out the
       following process steps after an application (or optionally a
20   transporter user interface) requests a transport function:
              1)   Local validation of the request returning a failure
                   code if the request is improperly specified.
              2)   Compression of all send objects for transmission and
                   placing them in the designated transporter work area.
25   3)   Connection attempts to remote server 22, returning a
                   failure code if necessary. Connections are made via
                   phone line or network. The system handshakes and
                   identifies the call to the server.
              4)   Presentation of the object manifest, if utilized, for
30   validation and action.
              5)   On receiving a go-ahead, transport of each send
                   object, logging each as sent, and receipt of object
                   acceptance codes from the server and logs them, when
                   received.
35   6)   Receipt of all fetch objects from the server, placing
                   them in the transporter work area, and logs them as
                   received. Fetch object names may be precise, or
                   generic or alias names may be used to request a latest
                   installment.
40   7)   Receipt and logging of a completed object manifest
                   from the server. (If receipt of response objects is
                   implied by the action codes, first receives a revised
                   object manifest, and fetches the response objects,

SUBSTITUTE SHEET (RULE 26)

-26-

5   then receives the completed object manifest.)

      8) Disconnection from server.

      9) Decompression and unpacking of all fetch objects into
            application work area, and logs completion status.

      10) Returns control to the application (or optional
10   transporter user interface).

The product checks the completion code, and completed object
manifest to deal with any error conditions. The application
performs any required import processing on fetched objects to
15   integrate the data and indexes with prior data, as desired, to
enable seamless use. If desired, import processing can include,
or offer as a user selection, file maintenance functions
relevant to the information product including, for example, file
purging to remove obsolete information files and preserve the
20   user's storage space. Specifications of files to be deleted can
be included with the original product or with a fetch object.
In either event the responsibility for accurate specification is
passed to the vendor, relieving the user of the risk of making
erroneous deletions and anxiety attendant thereon. After such
25   import processing the containing information product (or the
optional separate user interface) then returns control to the
user for use of the received data.

The foregoing steps are illustrated in the flow block diagram of
30   Figure 2. When containing information product 12 issues an
information transport call 50, setup filter 52 runs setup
routine 54 if this is a first call and no information transport
setup was run on installation of containing information product
12. At block 56, an object manifest is retrieved for pre-
35   transport preparation at block 58. After prepping, a call to
server 22 is established at block 60 and when the connection is
made, and a handshake performed, one or more objects is
transported at block 62.

40   After completion of transport and receipt of a completion
manifest, server 22 is disconnected at block 64, received
objects are decompressed and unpacked at block 66 and stored in
a designated disk storage location at block 68. Object storage

SUBSTITUTE SHEET (RULE 26)

-27-

5   triggers containing information product 12's import processing
     to assimilate the information update with the original
     information product at block 70, following which a completion
     report is issued at 72 and control is returned to the containing
     information product 12 at 74.

10

     Optional schedule function
     An optional transport function module for scheduled or poll-
     responsive information object transport can be provided to defer
     the fetching of an update or to defer another information
15   transport operation to a specified later time, or until called
     by the server.

     The optional transport function schedules a request, waits, then
     automatically performs the transport operation at the scheduled
20   time. In polling mode, it activates (and, if necessary,
     interrupts and then reactivates) the user station's ability to
     receive calls.

     Mechanics of the optional transport function include a request
25   for an ID number, an indicator for calling or polling mode and a
     schedule iterating a call time, a retry protocol, call
     activation and timing, along with an authentication procedure
     for the server and a completion status code.

30   **Client-Server communications protocol**
     Communications between the information transport component 14,
     functioning as a client, and the server 22 follow a predefined
     communications procedure having cooperative user components
     comprising user fetch-send protocol 38 and server fetch-send
35   protocol 44.

     Server-client intercommunication can be broken down into five
     steps, a) login, b) manifest transmission, c) send operation, d)
     fetch operation and e) logout, as described in more detail
40   below.

     a) login
     Login establishes a session with an authorized client. A

SUBSTITUTE SHEET (RULE 26)

-28-

handshake process between user protocol 38 and server protocol
44 identifies the user's transporter client system to remote
server 22 by product ID and user ID, and a password or other
authentication code. A failure reason code is given to rejected
clients.

b) manifest transmission
Preferably, via user protocol 38, the user system issues an
information object transport request manifest to server 22.
Server 22 verifies its ability to meet the request by returning
a manifest acknowledgment specifying which elements will be
processed and provides reason codes for declined elements.
Alternatively, as stated previously, manifest functions can be
listed in individual send and fetch protocols.

c) send operation
If the user system outputs a send object, through information
transport component 14 and protocol 38, server 22 receives and
accepts the send objects and stores them, identified by product
ID and user ID. Error control and retry mechanisms are employed
and successful receipt of the send object is acknowledged and
logged.

If the action code calls for a response object, the server
obtains necessary processing from a pre-designated external
source (corresponding to the product ID and action code) and
returns the response as a fetch object, called a response
object.

d) fetch operation
The server obtains requested fetch objects by product ID and
object name and forwards them to the transporter at the user.
Error control and retry mechanisms are employed and successful
transmissions are acknowledged and logged.

e) logout
The server transmits the completed object manifest to the
transporter, confirms and logs receipt, and ends the session.

SUBSTITUTE SHEET (RULE 26)

-29-

**The inventive transporter compared with a conventional
communications product**
Figures **5 and 6** illustrate schematically the simplicity and
ease- of-use benefits the invention provides **Figure 6** to a user
100 in fetching an information object from a remote server 22 as
compared with the use of a conventional communications product
(**Figure 5**), such, for example, as CENTRAL POINT COMMUTE
(trademark) or PROCOM (trademark).

In the prior art embodiment of **Figure 5**, many operations require
active participation by the user who, for example, must at least
initiate any pre-transport preparation 104 of the information
object, such as checking the specifications, checking work space
available to store a fetched object and conducting any other
preliminary checks. The user has to activate a communications
product 102, specify a call route, and after the call connection
is established, specify the objects and initiate a transport
operation. Communications product 102, operating in a
cooperative manner with remote server 22, will execute establish
call connection 60 after the call route (phone number) has been
specified and will execute transport objects 62 after the
objects to be transported are specified by the user.
Disconnection 64 is usually effected by a user executing a call
termination command, which if the user is inattentive, or
inefficient, may be delayed longer than necessary to complete
the transport operation, running up unnecessary line or air time
charges.

After completion of the transport operations, user 100 has to
deactivate the communications product 102 and then initiate any
required storing and processing of the fetched product 106.
While some of these steps may be automated via one or more batch
files, scripts or macros, a vendor of a containing information
product 12 has great difficulty in furnishing such a batch file
or macro for a mass market distribution because of the different
systems and communications products encountered in a mass
market, which systems and products have a variety of different
specifications, performance characteristics and unique,
incompatible scripting languages.

SUBSTITUTE SHEET (RULE 26)

-30-

5   Equally, while some more skilled users 100 might be able to
     write their own batch files without undue difficulty to automate
     some of these steps. Many users will lack the ability or the
     inclination to do so. Also the effort would not be justified
     for a single transport operation. Nor is the result of such
10   efforts likely to match the ease and simplicity of the results
     achieved by the present invention which enables even a first
     update to be obtained effortlessly with the software running in
     unattended mode, after initiation.

15   **Figure 6** clearly shows how the inventive information transport
     component 14 relieves user 100 of many tedious communication
     functions such as activating a communications product,
     specifying a call route, specifying the objects to be
     transported and deactivating the communications product. In
20   addition, preferred embodiments of the invention also relieve
     the user of optional pre-transport preparation 104 and execution
     of store-and-process-fetched-product 106 if these functions are
     appropriate to the containing information product.

25   Referring to **Figure 6**, user 100 selects a transport operation
     from a user interface screen in containing information product
     12, whereupon the latter calls information transport component
     14 to activate transport. Information transport component 14
     implements any necessary pre-transport preparation 104 and then,
30   employing its own communications module 36, and server fetch-
     send protocol 44, proceeds in unattended mode, without requiring
     user intervention to establish call connection 60, to execute
     transport object 62 and automatically perform a disconnect 64,
     as described herein.
35
     Automatic transport control and disconnection is a useful
     feature of the invention providing economy of line or air time
     charges and reducing congestion on the communications carrier.
     Using conventional communications products, (especially with
40   online services) the duration of the connection may be
     unnecessarily extended by the delays and potential errors
     inherent in user control, resulting in increased communications
     costs and failures. The inventive transporter 14 provides

SUBSTITUTE SHEET (RULE 26)

-31-

5   software control of the connection duration, enabling it to be
       confined to a period sufficient to effect said unattended object
       transfer, enhancing efficient use of the communications medium.

       Also as described, the operation can be monitored or controlled
10   by employing an object manifest and is facilitated by the use of
       pre-specified addresses and transport characteristics. After
       satisfactorily completing the transport, the information
       transport component 14 automatically deactivates and returns
       control to containing information product 12, preferably with a
15   satisfactory completion report which containing information
       product 12 notifies to user 100 through the containing
       information product 125 user interface.

       If the transport object 62 was a product update, optionally a
20   store-and-process-of-fetched-object 106 is initiated by
       information transport component 14 and execution of the store
       and process operation may be passed to the containing
       information product 12. The user can now use the updated
       product.
25
       As **Figure 6** shows, when read, in comparison with **Figure 5**, the
       invention enables a user 100 to be relieved of all duties save
       for minimal selection and notification functions, while no
       complex added functionality is demanded of containing
30   information product 12. Optional store-and-process-or-fetched-
       object 106 is contemplated as requiring only minimal
       modification of existing containing information product 12
       functions while other more complex procedural and detailed
       transport related functions are handled by the information
35   transport component 14.

       Some non-limiting examples illustrative of practical commercial
       and industrial applications of the invention will now be
       described.
40
       Example 1:   A News Magazine Distributed on CD-ROM
       Some weekly news magazines offer subscriptions to a quarterly
       CD-ROM which contains multimedia material plus a searchable

SUBSTITUTE SHEET (RULE 26)

-32-

5   full- text database of the most recent quarter's weekly magazine
       issues and enabling application software. Newer issues are not
       provided until the next quarterly disc is mailed. Accordingly
       the CD-ROM electronic magazine product steadily becomes out of
       date and its value lessens.

10

       The invention incorporates an information transport component 14
       with a news magazine product stored on a CD-ROM 16, to enable a
       user to fetch an information object 46 in the form of new issues
       (and their associated search indexes) from a remote server 22,
15   as they become available, for example weekly. The fetched
       updates are stored on a consumer's computer hard disk storage
       device 24. Because of the size of rich content multimedia
       files, the updates are limited to text material including full
       texts of interim issues and associated files such as indexes.
20   Because it knows the storage location of the updates, the next
       CD-ROM issue can include, as an install option, or upon first
       access, a request to delete the old now-outdated updates from
       hard disk 24, creating space for new updates.

25   User interface 28 in conjunction with user interface 34 contains
       code providing a menu selection enabling a user to activate the
       update fetch operation and then to provide integrated or
       seamless access to the combined data, searching both the hard
       disk storage device 24 and the CD, using both sets of indexes,
30   so that the contents are viewable as a single collection,
       although an additional independent searching/viewing function
       for the updates could be provided, if desired.

       A product setup routine adapts the information transport
35   component 14 to work with the news magazine CD-ROM's existing
       software for creation of a user interface, searching and
       viewing. Communications options may be limited to direct
       telephone dial only. A simple user interface addition controls
       a setup process allowing the user to enter a unique user ID,
40   provided with each copy of the CD-ROM distribution disk, and to
       create predetermined work areas on the user's hard disk.

SUBSTITUTE SHEET (RULE 26)

5 A schedule of updates with names, dates, and files sizes is
   provided in the containing news magazine product on the CD-ROM
   and is accessed via user interface 28 in conjunction with user
   interface 34 to create a fetch object manifest 48. Optionally,
   user interface 28 in conjunction with user interface 34 creates
10 a send object manifest 48 to control transport of user
   demographics for market analysis or for renewals, or the like,
   in the opposite direction from the user to the server, with the
   send operation being triggered whenever the next transport
   operation is activated, or optionally, by allowing by allowing
15 the user to trigger it.

   A fetched information object 46, such as an update, is
   automatically decompressed and stored on hard disk storage
   device 18 as additional information object 26 for integration
20 with the original CD-ROM product so that the user can view both
   the update and the original issues, and run searches across the
   entire collection.

   Optionally, initial location of additional information object 26
25 may be an application work area location on storage device 18,
   and communications component 36 may be pre-set to pass control
   via API 42 to database management module 30 which will do
   further processing to integrate additional objects in accordance
   with the existing database structure 32 to provide a more
30 complete level of integration permitting, for example, viewing
   of combined menus, nullification of obsoleted items, and
   cross-linking of hypertext elements.

   If a send object has been prepared and included in the object
35 manifest, such as a send object containing user information
   entered during the install process, or subscription request
   information obtained from the user, it is sent to server 22 to
   be stored and identified by product and user ID for appropriate
   action in due course. Acknowledgement of receipt of the send
40 object is noted by communications component 36 and passed back
   to the user if such provision is made in user interface 28.

-34-

5   Both the fetch and send operations are closed ended in the sense
       of being operations that are pre-described in the original
       information product and once triggered, can be completed without
       human intervention of any kind.

10   To service the automated update facility running at the user's
       workstation, remote server 22 is set up to accept calls from
       valid user ID's, and is loaded with new issue text and index
       files, in the form of update

15   information object 46, according to a publication schedule.

       Example 2:   Open-ended Fetch of a Supplementary News Magazine
                            Object
       Open-ended access to supplemental information objects not
20   described in the original information product can be obtained by
       providing in the original product means to fetch a directory of
       added features. This can be used, for example, by a news
       magazine publisher to provide special news features on an
       unplanned basis, or each weekly issue could be packaged with a
25   directory of additional features available. The user first
       specifies a fetch of the new directory, or receives it along
       with a fetched update they have specified from a user interface
       menu, and then views the fetched additional features directory
       and initiates a fetch of a selected additional item or items in
30   a second information object transport operation, using an
       information object manifest built from the new features
       directory.

       The original, containing product news magazine CD-ROM user
35   interface 28 preferably has provision for importing and viewing
       any information objects listed on a completed fetch manifest and
       delivered by the information transport component 14 into the
       designated work areas. Alternatively, a standard information
       transport component 14 user interface 34 .can be used to provide
40   this function in a less integrated form.

       Example 3:   Retail Catalog on CD-ROM with Merchandise Order
                            Entry at the Server
       Multimedia product catalogs with 800 ordering numbers are now

SUBSTITUTE SHEET (RULE 26)

-35-

5 available on CD-ROM and also with pre-installed software
packages on new computer hard disks. In this example, the
multimedia (or text and graphic) product catalog is a read-only
information product 17 which can be furnished with an
information transport component 14 according to the invention,

10 to facilitate order placement from such electronic product
catalogs providing an easier order placing process than has
heretofore been possible. Employing the inventive information
transport component 14, a catalog vendor can enable a customer
to place the order directly, via modem, without requiring a

15 voice call and ensuing verbal product identification, by
pointing and clicking a "Place Order" or "Mark for Order" button
on the user's computer screen. The order is transported to
remote server 22 using the novel information transport component
14. Preferably a verification routine is included, requiring

20 order confirmation with a user-supplied password, and possibly
keying of the total amount to prevent unauthorized or
inadvertent product ordering, for example by children.

Order fulfillment is effected by processing of the information

25 in due course after receipt by the remote server 22 and any
additional information required centrally is collected during
product setup and held locally for transmission with an order.
For example, setup can capture the user's charge card
information,

30

shipping address, and the like and create a header for an
electronic order form.

When the user clicks the "Mark Order" button, procedures

35 supplied with the user interface 28, as modified through user
interface API 40, add order item identification information to
an electronic order form. When the user clicks the "Place
Order" button, user interface 28 triggers a transport request to
server 22, to include the order form as a send information

40 object 46. Transport of the send object, including the order
form, from the user's station to the server is executed
employing an object manifest 48, as described herein.

SUBSTITUTE SHEET (RULE 26)

-36-

5   If not located at a vendor's or merchant's premises, server 22
    can forward received electronic orders to the merchant for
    fulfillment, at appropriate intervals, via a vendor link 50.

    This simple, low cost mechanism for automated order placement,
10 can complement telephone ordering but lacks the credit-checking
    and inventory status capabilities that are frequently provided
    by phone. However, such a catalog application could allow the
    user to request the fetching of an inventory and price update
    object for use prior to the preparation of an order.

15

    Example 4:   Merchandise Order Processing and Confirmation
                      Retail Catalog on CD-ROM
    A powerful electronic merchandising tool can be provided by
    providing the user with a full-function order generating
20 capability and employing transporter 14 to transmit a user -
    created merchandise order, effortlessly and seamlessly, to a
    remote order-processing server. To this end, server 22 should
    be interfaced to the necessary merchant processing services for
    checking and reporting credit and inventory status.

25

    An additional valuable option enables the system to apply pre-
    specified user instructions, previously obtained through user
    interface 28, to determine whether out-of-stock items are to be
    dropped, back-ordered, or substituted in color or other aspect.
30 This information can be added to the electronic order form
    object, listed in object manifest 48 and become the subject of a
    further transport dialog between the user's station and server
    22. In this manner a sophisticated purchase transaction is
    completed in a substantially unattended manner (save for
35 deciding about back orders off-line), in as much as the customer
    does not have to maintain a phone conversation, while fully
    achieving the capabilities of telephone order placement. A
    further user benefit can be obtained by the providing a
    permanent record of the transaction (a stored electronic file)
40 without user intervention. This not possible with telephone
    ordering.

    This novel, automated, modem driven, order placement system
    effectively shields a merchant from having to deal with the

5   problems of establishing communications with a mass of unknown
     end user computer systems, while automating the process and
     relieving the merchant of the costs of telephone sales staff.
     This aspect of the invention is valuable in avoiding
     troublesome, support intensive, communications which are subject
10   to rapid technical change as new products are absorbed into the
     marketplace. In contrast, the merchant's special purpose vendor
     link 50 to the server 22, can remain relatively stable, while
     the customer interface at server 22, depending upon the
     sophistication and universality of the API's 40 and 42, and also
15   upon any emergent communications standards, can be adapted to
     accommodate a range of future products.

     Example 5:   Further Applications of the Invention:
                    <u>**Locked information products**</u>
20   As discussed in the "BACKGROUND OF THE INVENTION" hereinabove,
     some vendors, for example Microsoft Corporation, distribute
     information products in locked, inaccessible form, accompanied
     by (user-accessible) promotional information and demo versions.
     The prospective purchaser then calls an 800 number to order the
25   product and is given a code which is entered to unlock the item
     for use. The inventive information transport component 14 and
     cooperative server component 22, can be used to simplify this
     process, and eliminate the voice call.

30   The information transport component 14 is used to place the
     order and as a subsequent step concomitant with satisfaction of
     the merchants purchase requirements (payment, etc) can,
     employing a suitable line entry or entries in the object
     manifest 48, fetch the access code, as an information object 46,
35   in the same way as an order acknowledgment or other information
     update. The user interface and data management components of
     the distribution CD, or original information product, can be
     programmed automatically to use the code to unlock the product.

40   Employing the novel, digital, modem-enabled communications
     products of the invention, more sophisticated access codes than
     are suitable for verbalizing to a caller, can be used, and may
     include small programs or decompression utilities (although
     these would better be stored in the locked product), or

-38-

5   customer-specific coding employing user-derived information.
     Thus, as a safeguard against fraud, being equipped with specific
     user or user product information, the access code can be a key
     or product uniquely matched to the user's locked product copy.

10   **Computer Software Updates:** For distribution of updates to
     software products, the original distribution version of the
     software product can provide registered users with an
     appropriate ID code and update schedule. Should the revision be
     delayed, a revised schedule can be fetched.
15

     Tax or other governmental filings and exchanges: An example of
     the generality of the inventive information transport system for
     sending and fetching well-defined information objects of many
     kinds is in the filing of tax returns. A send information
20   object can be created and manifested to submit electronic tax
     filings to the IRS, as described above, for electronic product
     order forms. A fetch object can be created to obtain updated
     tax forms and the program logic relating to them, and to get
     information on new regulations. Analogous uses will be apparent
25   to those skilled in the relevant arts of, for example, financial
     planning and portfolio management systems, to obtain current
     statistics, place orders, and the like.

     Packaging of Transporter with User Interface/Database Search
30   **Software Facilities**
     In a modified embodiment, the inventive information transport
     component 14 is integrated with a general purpose user
     interface/database search (UI/DB) software package and tools.
     Such packages and tools, sometimes referred to as "authoring
35   packages", are now used to produce CD-ROM's and similar
     information products. Thus a single UI/DB product may contain
     the inventive information transport component 14, and be
     supplied to publishers to be used to develop a family or
     diversity of information products, as a standard tool box.
40

     A combination of the inventive information transporter product
     with such UI/DB products could facilitate development of
     applications by allowing much of the work of integrating a
     containing product's user interface 28 and database functions 30

-39-

5   and 32 (which could be controlled through the UI/DB product)
     with the inventive information transport component 14 to be
     performed once, in advance, by a UI/DB software vendor's skilled
     specialists, for use in a diverse range of products using that
     vendor's software. Such integrated offering would be
10   advantageous to both the software vendor (by enriching its
     offering) and to the software vendor's publisher-customers by
     facilitating the desired function.

Electronic product distribution service
15   In a valuable application of the novel electronic information
     transport products of the invention, remote server 22 can be
     operated to provide an electronic data product distribution
     service for multiple containing information products 12, each
     equipped with an information transport component 14, the whole
20   facility providing a complete network distribution service,
     including network, technical and end-user support. Provision of
     such a distribution service is greatly facilitated by the novel
     transporter 14, described herein, the use of which for each
     vended product greatly simplifies the problems of handling
25   updates to multiple products. However, such a novel service
     could also be operated with conventional software communications
     products by relying upon users of each to execute an appropriate
     sequence of menu selection and command line instructions to
     obtain an update by modem via their own pre-existing
30   communications software. Similarly, while special advantages of
     seamless user adoption and integration into an original product
     accrue from the use of the inventive transporter to distribute
     product updates, such a distribution service can be used with
     advantage to distribute any type of electronic information
35   product.

     For many publishers (and for providers of UI/DB authoring
     software) the task of operating a publicly available server 22,
     and of supplying associated technical support to a wide base of
40   customers using a diversity of communications products, even
     with the simplification benefits provided by the inventive
     transport product, is a task requiring specialized skills and
     staffing that a publisher, even one experienced in electronic

5   publishing, will generally lack. Such a specialist capability
    is intimidating to provide and difficult to cost-justify for the
    limited number of information products that one publisher can
    supply.

10 By providing a new turnkey service or service bureau a
    specializing, skilled vendor would enable the publisher to avoid
    such burden. A provider of such a novel service can spread the
    costs of such operational activities and skilled staff across a
    large number of publishers and information products, achieving
15 economies of scale and specialization.

    The inventive information transport products extend to software
    implemented at server 22, or at one or more clients or satellite
    servers, of a network served by server 22, to provide the
20 server-location functions of such an electronic product
    distribution service. Such distribution software can be
    separately marketed to publishers or UI/DB vendors who wish to
    operate such a service.

25 **Gatewayed, "open" server**
    Example 4, above, shows how information transporter 14, as well
    as server 22 can remain simple yet provide a highly general and
    extensible service. In that example, server 22 provides the
    functionality of a general-purpose transaction gateway or
30 interface to an external function processor. In this particular
    case, the external function processor gatewayed by server 22 via
    vendor link 50, is the merchant's order processing system, which
    receives the order, determines its disposition, and responds
    with order status information which is relayed back to server 22
35 for return to the customer as a response object in accord with
    protocols 38 and 44. The user need not be aware of such
    complexities, nor do the client transport components 14 of the
    inventive product need to be aware of, or provide information
    for remote routing via vendor link 50. Only the server 22 needs
40 this information, and server 22 needs only to know that send
    objects with names that fall within a specified class for a
    specified product ID, must be forwarded to a specified external
    processor, and that the corresponding responses from that

-41-

5   processor must be routed back to an originating client as
      response objects. Thus the inventive information transport
      component 14, by virtue of its simplicity has general
      applicability and many uses, as described herein and as will
      further be apparent to those skilled in the art.
10

      In implementing an ordering service using the inventive
      information transport component 14, order and response objects
      are preferably formatted by the containing information product
      12 to be consistent with existing or future electronic data
15   interchange (EDI) standards which define protocols and formats
      for data interchange between customers and vendors. The
      information transport component 14 and the server protocol 44
      provide the low-level EDI transport functions and are
      independent of object content defined by higher layers of the
20   EDI protocol. Preferably, the server has added routing layer
      information to move objects to and from the external processor.

      To provide a suitable EDI-compatible function, server 22 can be
      programmed with such higher layer EDI routing data for its
25   exchanges with the merchant's external processor. Employing
      such a gatewayed system, a single EDI network connection can be
      used to connect the server 22 to a large number of different
      merchant processors anywhere in the world, across wide area
      networks and links between same, for example Internet.
30

      This concept of an "open" server, providing a gatewayed pathway
      for information objects to travel between a wide base of users
      and one or more remote vendors or other object sources is
      greatly facilitated, or enabled, by employment of the inventive
35   transporter 14 which effectively provides a protocol translation
      function enabling a simple information transport service to be
      offered which is easy and economical to use, both for the end
      user and the vendor or information supplier. Such a transport
      service compares favorably, for its intended information
40   transport purposes with broader function and more complex full
      online services, such as COMPUSERVE (trademark), and the like,
      described hereinabove.

SUBSTITUTE SHEET (RULE 26)

-42-

5 **Further embodiments with broadcast, subscription delivery and on-demand capabilities:**

Receipt of broadcast data:

As an alternative to modem-based wireline or wireless calling to
10 a server and requesting data objects, the information
transporter system of this invention can be beneficially
employed in a broadcast information distribution system wherein
data information objects are contained within a broadcast data
stream with recipient communications devices tuned to identify
15 and receive from the broadcast specific data elements to which
they are entitled.

Broadcasting can be airwave broadcasting via satellite, FM, or
TV subchannels in the manner, for example, used by Mainstream
20 Data Ltd. for the broadcast of news wires. Alternatively, the
broadcast data stream may be cable or line transmitted, for
example, over cable television systems. Minor extensions to
API's 40 and 42 could accommodate such a facility. A modified
setup function could alert a user's receiving communications
25 device to watch for receipt of data objects identified as
relating to the original or containing information product, and
to capture and hold identified objects in temporary storage. A
scheduled transport function can then be set to fetch the
received data objects from temporary storage and prepare them
30 for use.

Subscription delivery: Although the invention has been
described as being particularly applicable to the solution of
problems arising in distributing updates of original or
35 previously purchased or delivered electronic information
products, many of the benefits of the invention can be obtained,
without any initial information content being delivered to the
user, with the original product. The user could simply receive
the information transporter 14 and all product information could
40 be received subsequently, after installing the information
transporter 14, in the form of fetch objects transmitted from a
remote server or other suitable source. For example, a
newsletter service could provide a disk with the transporter and
a user interface, but with no initial information content.

SUBSTITUTE SHEET (RULE 26)

-43-

5   **Information-on-demand services:** In another embodiment,
     providing an information product on demand service, vendors can
     freely distribute a novel electronic marketing product
     comprising a transporter on diskette, along with a simple user
     interface and a catalog of information product items available
10   from the vendor, without including the products themselves.
     Such an electronic marketing product could be distributed
     through the mail, as a magazine insert giveaway, on through any
     other suitable marketing medium. The transporter could be
     activated at any time by the user to call in and fetch a
15   cataloged product, as well as a current catalog, possibly after
     sending a credit card order form, or the product price could be
     paid to the vendor by obtaining the product from a 900 number
     providing vendor reimbursement from the telephone network.

20   **Open architecture online service access**
     In a further aspect, the invention provides an information
     transport component 14 that functions as universal or generic
     client interface software, enabling a user client to work with
     any one or more of many online server-based information
25   distribution services.

     Many online information distribution services used to
     disseminate electronic publications comprise intelligent user
     interfaces which employ a client component running on a
30   customer's personal computer (PC) to communicate with a central
     server facility operated by the online service, by means of a
     proprietary protocol. The client interface packages are
     proprietary to a particular online service.

35   Prospective publishers wishing to offer electronic products
     online, contract with online service providers to enable
     customers to use the online service's client software to access
     the publisher's material and related online communications
     services (bulletin boards, etc.) on the services' servers. The
40   publisher is limited to using the presentation facilities
     provided by the user interface in the online service's client
     software. This limitation impedes migration of publisher
     offerings and makes it difficult for either a customer or a

-44-

5   publisher to swing information transport component 14 access
     from one service provider to another because each service
     requires its own software package.

     Third party interface developers cannot contribute to such
10   online interfaces for a publisher without the cooperation of the
     online service provider which may be difficult or impossible to
     obtain. Accordingly, only limited user interfaces with moderate
     sophistication and variety can be offered.

15   Accordingly in another aspect, to provide open architecture
     online service communication, the inventive information
     transport component 14 can be embodied as a flexible client
     interface which can be actuated to operate with any one of a
     number of online services by providing a generic client
20   interface foundation API (application program interface)
     combined with a set of translators and protocol drivers capable
     of communicating the user's functional requests to any one of a
     set of online services, using their corresponding proprietary
     protocols.
25
     In this aspect the invention permits publishers to develop
     highly sophisticated and individualized user interfaces
     independently of the limitations of the online service
     providers' capabilities. Such enhanced user interfaces are
30   attractive to publishers seeking differentiation of their
     products by providing an appealing individualized interface with
     a signature look and feel. In contrast, online service
     providers seeking to economically carry content from many
     publishers provide generic interfaces acceptable to all.
35
     By incorporating operational translators for a number of online
     service protocols, which translators fully adhere to the
     detailed specifications of each protocol, a multi-service
     capability can be provided.
40
     Online services generally provide similar types of services with
     nearly standard functions and similar user interfaces. Major
     service types include bulletin board, chat, electronic mail,

SUBSTITUTE SHEET (RULE 26)

5   document browsing, and database search. Use of creative
     typography, layout, graphics, and other artistic elements to
     offer the presentation quality and variety typical of print
     media is desired by publishers using this medium.

10   The invention facilitates this end by providing open development
     platforms for development of advanced interfaces while shielding
     developers from the complex details of communication with an
     online server. The shielding is accomplished by providing an
     API which supports communications service requests at a simple
15   functional request level.

     Referring to Figure 3, multiple targeted online services 80, can
     be accessed by a client interface 82 comprising any of multiple
     graphical user interfaces 84 driving a generic API 86 which
20   works with plug-in translator/communicator modules 88 which are
     provided to communicate one to each targeted online service 80.
     Modules 88 mimic the online service's protocols, so as to be
     essentially indistinguishable from the proprietary interfaces
     normally used. A communications manager 90 receives input from
25   API 86 and outputs through protocol mapper 92 which selects the
     appropriate protocol.

     In this embodiment, for use with full-function online services,
     the functions of API 86 and protocol 88 are extended to support
30   extended, open-ended interactive sessions and the more varied
     client-server interaction needs of session-oriented interactive
     online applications such as bulletin board posting and browsing,
     online chat, electronic mail, database and menu browsing, and
     database search.
35
     Similarly, in the aspect shown in Figure 3, the invention can be
     provided with the same kind of additional flexibility with
     regard to the user's connection to server 22 as the invention
     can provide for more basic fetch and send functions. While the
40   inventive client server protocol 38 and 44 is particularly
     suited to the functions described, other existing or future
     services and corresponding protocols could be used, if necessary
     with adaptation, to provide workable services for use in

SUBSTITUTE SHEET (RULE 26)

-46-

5   conjunction with transport component 14.   Such use may require
    modification of communications module 36 and protocol 38 by the
    addition of a protocol mapper 92 and appropriate server protocol
    plug-in 88 to communicate to an alternative server.

10 In either case, such added flexibility in use of the inventive
    product increases a publisher's choices in selecting server and
    network facilities through which to distribute information
    products, and enables the publisher to offer fully customized
    user interfaces for use with multiple, or any one of multiple
15 server and network services which do not provide for such
    customization.   In this embodiment of the inventive transport
    component, a containing product can offer a unique custom
    interface and provide for access to additional information
    products from such varied source facilities as the Internet,
20 full function online services, emerging groupware network
    services, conventional bulletin board systems, and future
    network services using wireless or cable television technology.

    While the invention can provide a flexible, generic API, in some
25 circumstances, an existing third-party API designed for use with
    a single specific online service can be combined with an
    embedded transporter and server protocol mapper to allow
    products designed to use the third-party API to employ any of
    multiple servers for distribution, avoiding commercial
30 distribution restraints associated with that API, for example
    use of a particular server.

    The inventive protocol mapper 92 can insulate a containing
    information product from the variations among such services, and
35 can allow a single such information product to be transported
    through a variety of such services, and to later be moved to
    other such services by simply selecting an alternative protocol
    mapper.   Multiple such protocol mappers can be packaged within a
    given information product to permit alternatives to be selected
40 by the end-user from a list.   Thus the invention further permits
    information products and related UI/DB authoring tools to be
    service-independent and neutral.

5   Figure 4 provides an overview of the use of the inventive client
       interface accessing multiple publications via multiple remote
       online services, as well as multiple locally mounted data
       sources and storing additional retrieved data locally.

10   Enhancements can enable a publisher's service to provide
       integrated, seamless access to content distributed over several
       different online services; to seamlessly combine access to both
       online and local CD-ROM-based content; and to coexist with and
       share resources with other publishers' services on the user's
15   PC.

       In summary, the invention provides, in this aspect, a simple,
       easy-to-use multi-protocol capability that enables an electronic
       information object to be transported from a publisher to a wide
20   base of users by any one of a number of online services, without
       sacrificing individual product identity.

       Recursive updating of the transporter
       Another application of the inventive information transport
25   product, or transporter, is a recursive use to update itself, in
       the same manner that the transporter can update a containing
       information product. This method can be useful in a variety of
       ways, including to upgrade the transporter by the addition of
       new protocol components, new compression techniques, or new
30   network access methods.

       An important class of such self-updates is to provide added
       flexibility in specifying network access procedures. For
       example, the user setup routine could be extended into a two
35   stage process. In a first stage, each user's transporter calls
       in to a common pre-set phone number, in order to fetch a second
       phone number selected according to the user's particular
       product, location, or some other parameter. The second phone
       number, or other address, can then placed in the setup as an
40   update, to be used in subsequent transport operations.

       This two-stage method can provide efficient use of a single pre-
       set toll-free 800 number for an initial call from any number of

-48-

5   different products, which initial call yields a second number
    corresponding to a specific Product ID, which number is used for
    subsequent calls.

    In an advantageous embodiment, the second number is not toll
10 free and may include vendor charges, in the manner of a 900
    number. This arrangement enables a system in which users do not
    pay for initial setup calls (and any failed connections which
    might result from initial setup problems), but do pay long-
    distance toll charges, and per call vendor fees if the publisher
15 so desires, for subsequent product information transport from
    the second number. This two-number process can be carried out
    without requiring any phone number entry or selection by the
    user. Additionally, the second number can readily be changed
    whenever desired by the publisher, even after product discs have
20 been shipped.

    User's station
    References herein to a user's station, workstation, computer or
    terminal will be understood to embrace any "information
25 appliance" or intelligent device having the basic computer-like
    functions of programmed logic, storage and presentation, or
    having the ability to support an operating system for managing
    user input-output with a processor, including intelligent cable
    television controllers, video game players, information kiosks,
30 wired and wireless personal communicators, and even system
    controllers such as automotive computers.

    Benefits provided by the invention
    Employing the novel information transport component 14
35 interacting with remote server 22 through communications
    protocols 38 and 44, the invention enables the following
    advantageous objectives and other benefits to be achieved:
            i)   simple and easy execution of one or more fetch or send
                  transactions to or from a remote server, by an
40   ordinary, unskilled user with no human interaction at
                  either end being necessary after initiation;
            ii)   automated transport of predefined information objects
                  between client and server in a closed-ended fashion,

SUBSTITUTE SHEET (RULE 26)

-49-

5   without burdening a client-based user with complex
           routing logic; and
      iii) creation of an economic, easy-to-use, function-
           specific, self-contained information transport
           component 14 software module suitable for mass
10   distribution in a containing information product.

The preferred use of an object manifest in a transport control
mechanism which includes transporting the object manifest
between client user and server, and referencing the object
15 manifest by user fetch-send protocol 38 and server fetch-send
protocol 44 facilitates achievement of the following additional
objectives:
      iv) simple, tight-knit control of the communication
           process and of error handling; and
20   v) creation of a transport control mechanism, and thence
           of an information transport component 14, which
           operates smoothly and transparently to the user and
           independently of the information object content or of
           the nature of the application.
25 The invention thus provides an information transport software
component which can be employed to transport a wide variety of
data objects or applications and can be easily incorporated in
many different information products to provide multiple novel
containing information products 12 with built-in automated
30 updatability or upgradability executable at an appropriate time
by simple, user-menu selection or automatically.

Further benefits
      In addition to the benefits of a powerful and efficient
35 information transport method, use of a standard, formalized
transporter, its API, and client-server protocol, pursuant to
the teachings of the invention disclosed herein, can provide any
or all of the following significant benefits to users,
information product vendors, application vendors, service
40 providers, tool vendors or others:
      vi) use of a standardized facility to perform a well-
           defined function in a known way (with available
           implementations for a varied and expanding set of

SUBSTITUTE SHEET (RULE 26)

-50-

5   hardware and software platforms);

    vii) reliance on a standardized facility that can be
         extensively tested and proven reliable across a wide
         variety of equipment and conditions;

   viii) reduced need for information product developers (and
10   users, and user interface/database search software
         vendors) to know and understand the complexities (and
         rapid evolution) of data communications;

     ix) ability to build a single functional interface that
         can smoothly employ a dynamically expanding variety of
15   communications facilities and technologies;

      x) ability to obtain operations and user support services
         relating to the difficult task of managing a server
         and its communications with large numbers of end-
         users;

20   xi) user-recognition of the novel information transport
         facility across a range of unrelated products,
         establishing a positive brand cachet benefiting users
         and vendors alike;

    xii) ability to package the transporter facility with other
25   tools, such as a UI(user interface) and database
         search capability to extend the value of those tools
         economically and with the ability to gain the benefits
         described above; and

   xiii) control of communications costs and failures by
30   elimation of human intervention, with its attendant
         time-consuming delays and errors, from the period
         during which the user's station is connected in real
         time communication with remote server 22.

35 Stated succinctly, by having the novel information transport
   component rely entirely on a containing information product for
   all user interface and information presentation functions, there
   need be no restrictions on the creativity of the containing
   product imposed by the needs of a third party communications
40 product. Thus the containing information product can present
   transport functions with any desired look and feel.

SUBSTITUTE SHEET (RULE 26)

-51-

5   Another advantage of the information transport system of the
    invention is the avoidance of difficult or complex navigation
    tasks, and the use of simple direct dial communications which
    are suitable for sessions that are short and infrequent. The
    inventive information transport products described herein are
10 consistent with or readily adaptable to the needs of many
    publishers of a diversity of materials, which needs are commonly
    centered on discrete products and content.

    A further advantage of the invention, from the point of view of
15 publishers, is that because the call is customer initiated, the
    customer pays transport costs (telephone line charges),
    simplifying costing for the publisher who avoids having to
    figure shipment or other transportation costs before sale and
    build these costs into the price of the product or update.
20

    The inventive approach to mass distribution of electronic
    information products described herein can also provide
    advantages in high-value environments such as those of
    Counterpoint Publishing's Federal Register products cited
25 hereinabove, providing a more seamless integration of the
    fetching of updates received via modem (and selected and
    extracted by the user from the "Daily Federal Register") with
    the original product on CD-ROM, the "CD Federal Register".
    Product installation can be simplified, and a separate user
30 invocation of, and interface to, a general-purpose
    communications package can be avoided. In addition, by
    employing the user's pre-existing modem and avoiding need for a
    general purpose communications product license, significant cost
    savings can be obtained.
35

    The better to comprehend its possible applications and
    enhancements, embodiments of the invention can be grouped in
    four levels, as a follows.

40 **Level zero** A novel basic transport function embeddable in any
    of a range of electronic information products to provide
    economical unattended updates.

SUBSTITUTE SHEET (RULE 26)

-52-

5   **Level One**   Basic transporter 14 incorporating API's 40 and 42
     adds a powerful new capability to be used with an electronic
     information product's custom user interface database management
     facility for seamless integration of an update with an original
     product. Optionally, the transporter can also integrate with
10   relevant third-party packages such as authoring packages.

     Level One (Server enhanced)   Adds server operation and user
     support features enabling publishers to outsource tasks which
     may be difficult or unfamiliar to them.
15

     Level Two   Adds optional translation or use of alternative
     server protocols enabling an embeddable transporter product to
     work with many different servers or services including, for
     example, standard BBS's, Internet servers, and special transport
20   services such as those offered or proposed by communications
     providers such as AT&T, MCI, Compuserve, America Online and
     cable television systems.

     Level Three   Adds a full online service user interface API with
25   correspondingly enhanced client-server protocols to provide for
     full-function online service sessions with user interface
     control and with ability to work with a range of online
     services, providing a publisher with flexibility in their use of
     existing and emerging services.
30

     <u>**Route selection for online access**</u>
     The invention extends to the use of a multiple protocol, network
     access capability, using protocols as described herein, to
     provide a single product with online access over whatever
35   network is appropriate, best or more efficient for a given user.
     An important embodiment of this aspect of the invention is to
     combine direct dial access for users who have no established
     data network access, with use of for example, the Internet or
     other TCP/IP network, for users who do have such access. Such a
40   selection could be user selectable, or automatic.

     Such embodiments of the invention are expected to have
     particular value as the Internet (or a follow-on variant)

SUBSTITUTE SHEET (RULE 26)

-53-

5   becomes widespread, but not universal. Publishers and marketers
     can use the Internet to reach many users, but will need an
     alternative direct path to offer access to the rest of a mass
     market of modem equipped computer owners who are not connected
     to the Internet. The network path will offer better
10   functionality, speed and economy to those who are set-up to use
     it, but a solution that is limited to that population will be
     incomplete. The expense and difficulty of establishing Internet
     access will probably limit its reach for many years. The
     invention provides an elegant solution to this problem and in
15   providing a multipath hybrid approach to problems of connection,
     access and object transport may have advantages over the World
     Wide Web for some applications.

     Technically, this is addvantageous because Internet access is
20   still hard to set up, but easy to use once it is set up. The
     multipath hybrid transporter of the invention does not have to
     address the problem of setting up Internet access (although it
     might), but can use it if access is available at the user's
     station and work without it if not.
25

     Network charging systems
     Effective flexible use of information networks by consumers and
     diverse businesse requires flexible alternatives for charging
     for network services. At present, the ubiquitous Internet has a
30   simple and singular charging system wherein users pay their own
     network access fees, usually on a monthly account basis with
     usage time-related charges. This is not satisfactory for casual
     or occasional users. The invention provides a solution to this
     problem permitting reverse charging by authorized users to
35   consenting sponsors.

     At a basic level, an extension of the invention for TCP/IP
     networks, or the like, can provide for collect calls to be
     identified at each network access point, and for session
40   negotiation functions to be provided to determine if a called
     server, operated for example by a commercial sponsor, will
     accept charges before a call is completed. Hosts that accept
     collect calls can have the option of selectively controlling

-54-

5   access to specific account IDs. If desired, usage data can be
     collected by the network operator and used to generate bills and
     call details to the sponsoring agency. This provides collect
     call and toll-free 800-number functions enabling sponsors to be
     accessed via the Internet or the like, without requiring users
10   to commit to monthly signup fees. Also, network access software
     can be stripped down and embodied in an original information
     product (for example a catalog on CD-ROM) providing simplified
     or automated installation for the user. Other modifications can
     permit more complex or sponsor-customized software to be
15   downloaded from the sponsor, using the transporter.

     900-number functions can also be provided, much as they are now
     done in proprietary fashion on some X.25 networks, to enable
     called product vendors to collect service fees. To do this one
20   or more billing gateway servers is established to manage session
     setup for calls using specially charged account IDs. These
     billing servers validate the caller's account and credit status,
     identify the pricing algorithms to be applied for the called
     server, and maintain an activity record for end-user billing.
25

     The modifications of the X.25 mechanisms consist of
     straightforward adjustments to deal with the details of how
     these networks define node addresses, and how they set up and
     break down connections. These modifications could be done by an
30   individual network access provider, with the restriction that
     they apply only among users and servers directly connected to
     their service or using their proprietary software, or more
     desirably, they could be applied on a standard basis by many or
     all network access providers, using X.75-like protocols, so that
35   they interwork smoothly throughout a global system such as the
     Internet.

     The addition of flexible charging capabilities to the Internet
     and similar TCP/IP networks expands the usefulness of these
40   networks for casual or ad-hoc use, and for information providers
     who offer services for fee, or who offer marketing or shopping
     services they wish to sponsor. This is particularly valuable to
     users of our embedded transporter, but it is also useful to

SUBSTITUTE SHEET (RULE 26)

-55-

5 users of conventional online browsers or other access tools.

While an illustrative embodiment of the invention has been
described above, it is, of course, understood that various
modifications will be apparent to those of ordinary skill in the
10 art. Such modifications are within the spirit and scope of the
invention, which is limited and defined only by the appended
claims.

Claims

Claim 1. A computer-implemented information transport software product for transport of an information object to a user's computer station from a remote object source provided with a source communications module having source protocols the user's station being in real time communication with the remote object source, which software product contains a user communications module having user protocols for information transport, **characterized in that** the software product comprises a separately suppliable software component for use with any one of multiple electronic information products for mass distribution of electronic information objects to users of a diversity of uncoordinated communications-equipped computer stations by enabling the users to fetch an electronic information object from an object source specified with the information product, in an online fetch operation proceeding in unattended mode after activation, the information transport software component being adaptable to each multiple information product to have a user interface in the information product for activation of the object transport from source to user in unattended mode after initiation, wherein the user protocols of the informaion transport component are preset to specify user station functions of the unattended object transport and the source protocols are preset to specify source functions of the information object transport, the user protocols being co-operative with and known to the source protocols to effect the unattended object transport automatically after initiation at the user station.

Claim 2. An information transport component according to claim 1 comprising object send means for unattended transport of a send object from the user's station to the remote object source.

Claim 3. An information transport component according to claim 1 **characterized in that** the object send means comprise a user-activatable selection in the user interface, and send specifications in the user and source protocols.

Claim 4. An information transport component according to claim 1 **characterized in that** the user communications protocols

-57-

5   specify a remote object source address and **characterized in
    that** object parameters selected from the group consisting of a
    file name, file names, file size, file location, file content
    and file format are specified in the communications protocols
    and the source communications protocols.

10

    Claim 5. An information transport component according to claim
    1 **characterized in that** the object specification is listed in
    an object manifest stored at the user's station.

15 **Claim 6.** An information transport component according to claim
    5 **characterized in that** the object manifest is sent to the
    remote object source as a verifier to assist control of the
    transport operation.

20 **Claim 7.** An information transport component according to claim
    1, comprising a high-level functional interface permitting the
    information product to remain unaware of and uninvolved in the
    technical and operational details of the communications process.

25 **Claim 8.** An information transport component according to claim
    1, **characterized in that** the electronic information product
    provides user interface and information presentation functions
    for the information object transport whereby the information
    product can provide information transport functions with any
30 desired look and feel unconstrained by a communications module.

    Claim 9. An information transport component according to claim
    1 **characterized in that** the fetched information object is pre-
    identified and integratable with the information product to
35 which the transport component is customized to provide an
    augmented information product.

    Claim 10. An information transport component according to claim
    9 **characterized in that** the information transport component
40 comprises:

            a)   a fetcher module configured to fetch the pre-
                  identified object from the object source employing a
                  pre-specified common carrier address stored in the

-58-

5   fetcher module;

   b)   a communications manager to establish and manage
        connection to the object source under control of the
        fetcher module and with the assistance of the user and
        source communications protocols; and

10 c)   a fetched object integrator to locate a fetched object
        in a preset file area accessible to and known to the
        containing information product;
   characterized in that the object pre-identification, the common
   carrier address and the preset file area specifications are
15 stored in the software component, whereby a workstation user of
   the information product can automatically effect transport and
   integration of a pre-identified object from the object source to
   create an augmented information product at the workstation.

20 **Claim 11.** An information transport component according to claim
   1 **characterized in that** the information transport component
   performs a containerized, standard transport operation, the
   transport operation being transparent to any high-level
   formatting of the transported information object, and
25 essentially repeatable for a wide variety of different
   information objects.

   Claim 12. An information transport component according to claim
   1 having means to pack or unpack, compress or decompress, and
30 send files to or fetch files from specified locations.

   Claim 13. An information transport component according to claim
   1 **characterized in that** the transporter allows the containing
   information product to be set up automatically to effect high-
35 level integration of indexes and navigational structures by
   letting the containing product have control to import or export
   or to encrypt or decrypt objects.

   Claim 14. An information transport component according to claim
40 1 **characterized in that** the novel electronic information
   transporter is seamlessly embedded in the containing product and
   is separable from the containing product to be usable with other
   containing products.

SUBSTITUTE SHEET (RULE 26)

5   **Claim 15.** An information transport component according to claim
     1 **characterized in that** the communications module is self-
     configuring and includes a workstation surveyor providing
     workstation configuration parameters.

10   **Claim 16.** An information transport component according to claim
     1, **characterized in that** the information transport component
     provides protocol selection means for selecting media for real
     time communication between the user and the remote object source
     employing a selection from a set of open-ended network
15   technologies and network providers, the communication means
     being selectable without substantive change to the information
     product.

     Claim 17. An information transport component according to claim
20   1 **characterized in that** the remote object source comprises a
     remote server capable of establishing real time communication
     with the information transport component for object transport.

     Claim 18. A information transport component according to claim 1
25   **characterized in that** the information product is a collection of
     issues of a periodical publication and the pre-identified object
     comprises an update issue.

     Claim 19. An information transport component according to claim
30   1 **characterized in that** the information product is a software
     application and the pre-identified object comprises an upgrade
     for the software application.

     Claim 20. An information transport component according to claim
35   1 supplied as a free-standing embeddable component for
     incorporation in an information product the information
     transport component comprising only such functionality as is
     required for the information object transport operation.

     Claim 21. An information transport component according to claim
     1 **characterized in that** the real time communication has a
     software-controlled duration confined to a period sufficient to
     effect the unattended object transfer.

-60-

Claim 22. A computer-implemented electronic information product comprising information content and an information transport component according to claim 1.

Claim 23. A computer-implemented information transport software component separately suppliable for use with any one of multiple electronic information products for mass distribution of electronic information objects from users of a diversity of uncoordinated communications-equipped computer stations by enabling the users to send an electronic information object to a remote center specified with the information product, in an online send operation proceeding in unattended mode after activation, the information transport software component being readily customized to an individual information product to have a user interface in the information product for activation of unattended transport of an information object from the user's computer station to the remote center, the user's station being in real time communication with the remote sender **characterized in that** the information transport component contains a user communications module having user protocols specifying user station functions of the unattended object transport and the remote center is supplied with a remote center communications module having remote center protocols specifying remote center functions of the information object transport, the user protocols being co-operative with and known to the remote center protocols to effect the unattended object transport automatically after initiation at the user station.

Claim 24. An information transport component according to claim 23 **characterized in that** the electronic information product comprises a merchant's product disclosure and the send object comprises a user's order electronically prepared from the product disclosure whereby the order can be placed with the remote center electronically in unattended mode without requiring a voice call.

Claim 25. A computer-implementable electronic information transporter **characterized by** being supplied as a free-standing embeddable component for incorporation in an information product

-61-

for transporting information objects related to the information
product, between a widespread base of users of a diversity of
computer stations and a specified remote center, the transporter
comprising:

    a)   a user interface in the information product for
                activation of unattended transport of at least one the
                information object; and

    b)   a user communications module cooperative with and
                known to a remote center communications module the
                user and remote center communications modules
                effecting unattended online transport of the
                information objects after activation;

wherein the information transport component comprises only such
functionality as is required for the transport of the
information objects.

Claim 26. A transporter according to claim 25 **characterized by**
being operative to provide unattended information object
transport only between an aforesaid user and at least one remote
address, the at least one address being pre-specified to the
transporter and including an address for the remote center.

Claim 27. An electronic information product distribution remote
server for use in transporting information objects to multiple
information transport components according to claim 1 located at
the remote center and being supplied with the source
communications protocols.

Claim 28. A distribution server according to claim 27 in
combination with a link to a remote vendor, whereby the users
can transport objects to or from the vendor via the distribution
server.

Claim 29. A distribution server according to claim 27 the server
being gatewayed to other information object sources.

Claim 30. A method of distributing predetermined electronic
information objects from a remote object source to users of a
diversity of uncoordinated communications-equipped computer

SUBSTITUTE SHEET (RULE 26)

-62-

stations, the method being **characterized by** comprising:

    a)   supplying the users with a separable information transport component containing user communications protocols specifying user station functions of a specified object transport operation; and

    b)   supplying the remote object source with a source information object and source communications protocols specifying source functions of the unattended object transport operation, the source communications protocol being co-operative with the user communications protocol to effect the pre-specified information object transport operation;

whereby the transport operation can proceed in unattended mode after initiation at the user's station.

Claim 31. A method according to claim 30 **characterized in that** after setup of a containing information product and a simple menu-selection activation of a transport operation the information transport component effects the transport operation in an unattended manner, without user intervention, through steps of modem activation, dialing, handshaking with the object source, file specification, file importation, termination of the call and return of control to the containing product.

Claim 32. A method according to claim 30 comprising additional steps of sending back verification of receipt of the fetched file to the object source, inspection of the fetched object and comparison with a pre-existing manifest for verification of object parameters, any necessary unpacking and decompression being effected automatically, in an unattended manner without user intervention.

Claim 33. A method according to claim 30 **characterized in that** additional steps of application file specifying, location or relocation of an object file or files, indexing, reindexing, index creation or use or hypertext or other product integration function that is required to enable the user to utilize the fetched object harmoniously with the original information product, be performed automatically in unattended manner without

SUBSTITUTE SHEET (RULE 26)

-63-

user intervention.

Claim 34. In combination, an electronic information product and an information transport component, the electronic information product being distributed to a heterogenous base of users, individual ones of the users having unspecified hardware platforms for implementation of the electronic information product, and a distribution server for distributing to requesting ones of the base of users an electronic information object related to the computer-implemented electronic information product, **characterized in that** the information transport component is a separable component embedded in said information product and comprises a user communications module having preset functions for communicating with the distribution server to retrieve the information object from the distribution server and **characterized in that** the distribution server has a communications protocol module specifically cooperative with the user communications module, whereby the user and server communications modules can effect transport of the electronic information object from the server to the user in unattended mode after initiation of the transport.

Claim 35. A combination according to claim 34 **characterized in that** the functions preset into the user communication module comprise:
  i) a communications network address for accessing the server;
  ii) a user handshake process cooperative with the server handshake process to establish communications with the server; and
  iii) an access path to the stored copy of the electronic information object;
wherein the server communications module is accessible at the network address and comprises a server handshake process cooperative with the user handshake process.

Claim 36. A combination according to claim 34 comprising additional the electronic information products having individually configured versions of the embedded communications module, the distribution server being configured to cooperate

-64-

with each the information product's embedded communications
module and storing copies of respective additional information
objects related to the electronic information products, whereby
the distribution server can cooperate with multiple information
products distributed to the heterogenous base of users to
transport a respective related information object to any
requesting user in the user base in unattended mode after
initiation.

Claim 37. A combination according to claim 34 **characterized by**
comprising an object specification listed in an object manifest
stored at the user's station wherein the information object
transport is automatically monitored for compliance with the
object specification.

Claim 38. A combination according to claim 34 **characterized in
that** the electronic information product is supplied to the user
base on a CD-ROM or other high capacity data storage medium and
the user and server communications modules communicate via
modems across a telephone network.

Claim 39. A combination according to claim 34 **characterized in
that** the user and server communications modules are cooperative
to transport, in unattended mode after initiation, a send
information object from a user in the user base to the
distribution server, wherein the combination further comprises a
remote link from the distribution server to a remote vendor of
the information product whereby the user can fetch one or more
information objects from, and send one or more information
objects to the remote vendor.

Claim 40. A combination according to claim 38 **characterized in
that** the information product comprises a catalog and the remote
vendor is a catalog merchant whereby the combination provides an
automated remote ordering system.

Claim 41. A combination according to claim 34 **characterized in
that** the information transport component includes a product-
specific user interface with the look and feel of the electronic

SUBSTITUTE SHEET (RULE 26)

-65-

information product, the electronic information object is stored on a compact disk and the remote server is accessed via an online service from the product-specific user interface.

Claim 42. A combination according to claim 34 **characterized by** comprising multiple the remote servers connected to be accessed by multiple targeted online services, wherein the information transport component comprises a product-specific user interface with the look and feel of the electronic information product and comprises multiple server protocol translation modules to communicate one to each the targeted online service, the protocol translation modules mimicking the online services' protocols, so as to simulate to the online service a proprietary client interface furnished to users for accessing the service.

Claim 43. A combination according to claim 42 **characterized in that** the information transport component further comprises a generic API driven by the user interface and cooperative with the protocol translation modules, a protocol mapper to select an appropriate online service protocol and a communications manager to receive input from the generic API outputs through the protocol mapper.

Claim 44. A combination according to claim 43 **characterized in that** the information transport component comprises multiple the protocol mappers and associated protocol translation modules.

Claim 45. A combination according to claim 34 **characterized in that** the electronic information object includes transporter update information to modify the operation of the information transport component whereby the information transport component operates recursively to update itself.

Claim 46. A combination according to claim 34 **characterized in that** the transporter update information comprises new protocol components, new compression techniques, or new network access methods.

SUBSTITUTE SHEET (RULE 26)

-66-

Claim 47. A combination according to claim 46 **characterized in that** the information transport component comprises a two-stage user setup routine havinga first stage wherein the transport component calls a pre-set phone number to fetch an electronic information object comprising a second phone number selected according to a user-specific parameter for incorporation in the transport component's setup as an update for routing subsequent information object transport operations.

Claim 48. A combination according to claim 47 **characterized in that** the pre-set phone number is a toll-free number and the second phone number is a tolled number for communication regarding a specific user-selected information product and is used for subsequent calls.

Claim 49. A distribution server for distributing an electronic information object related to a computer-implemented electronic information product to a heterogenous base of users of the information product, individual ones of the users having unspecified hardware platforms, **characterized in that** the information product including an embedded user communications module, the user communications module having preset functions for communicating with the distribution server to retrieve the information object from the distribution server wherein the distribution server comprises:
   a) a communications protocol module specifically cooperative with the user communications module, and
   b) a stored copy of the electronic information object;
whereby the user and server communications modules can effect transport of the electronic information object from the server to the user in unattenended mode after initiation of the transport.

Claim 50. A distribution server according to claim 49, **characterized in that** the server communications module is accessible at a prespecified network address and comprises a server handshake process cooperative with a user handshake process being a one of the functions preset into the user communications module and the electronic information object is

SUBSTITUTE SHEET (RULE 26)

-67-

stored at a location having a storage path preset in the user
communications module, the network address and the user
handshake process also being ones of the functions preset into
the user communications module.

FIGURE 1

50 — CALL FROM PRODUCT

52 — FIRST TIME CALLED?

YES → 54 SETUP

NO

56 — GET OBJECT MANIFESTS

58 — PRE-TRANSPORT PREPARATION

60 — ESTABLISH CALL CONNECTION

62 — TRANSPORT OBJECTS (FETCH AND SEND)

64 — DISCONNECT

66 — DECOMPRESS AND UNPACK OBJECTS

68 — STORE IN DESIGNATED LOCATION

70 — TRIGGER PRODUCT'S IMPORT PROCESSING

72 — REPORT COMPLETION

74 — RETURN TO PRODUCT
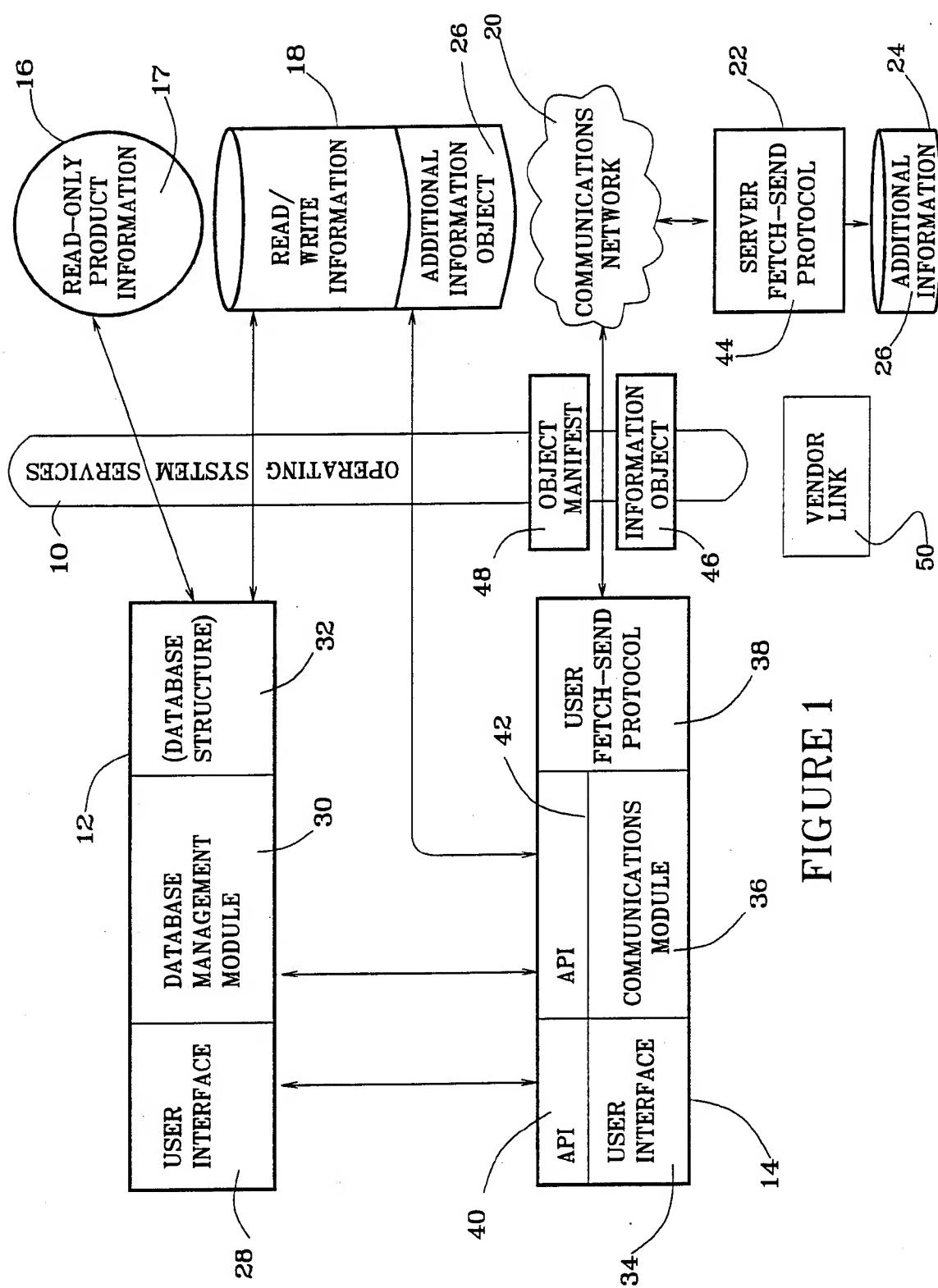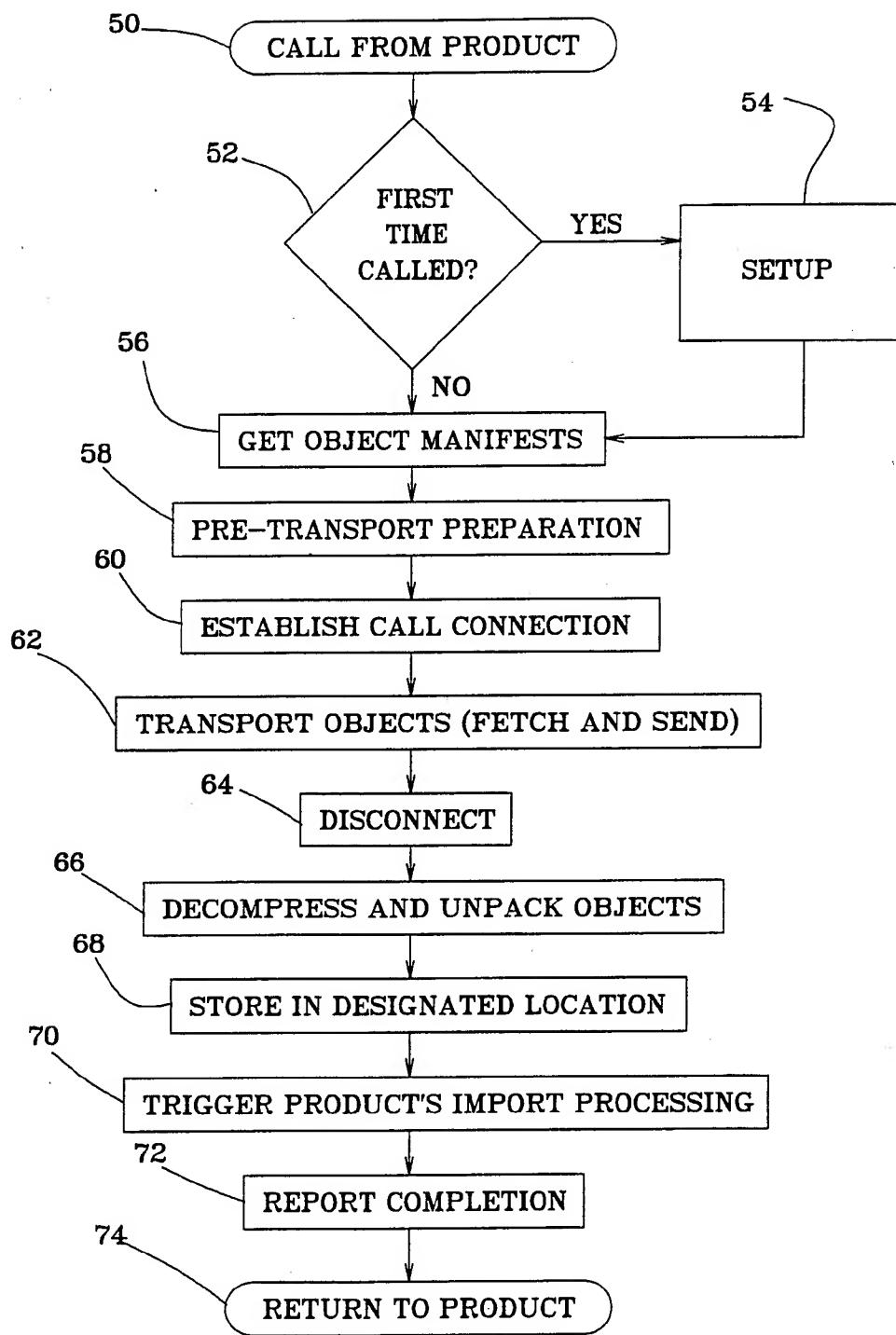
FIGURE 2

FIGURE 3

FIGURE 4

PRIOR ART
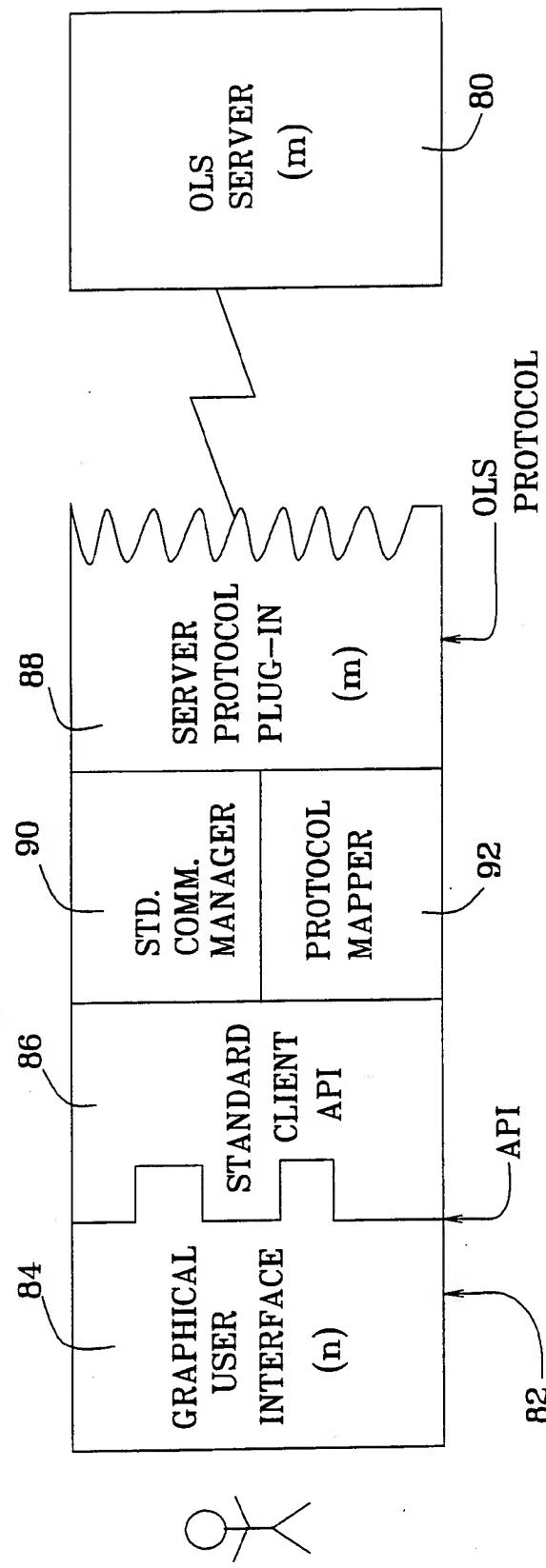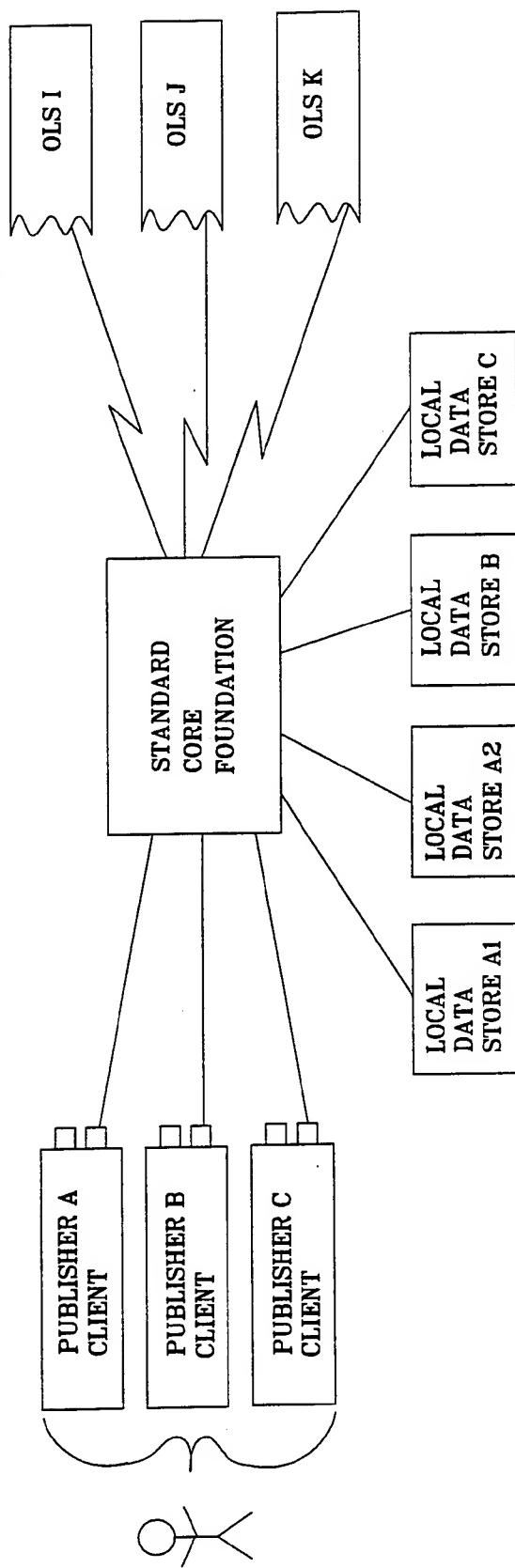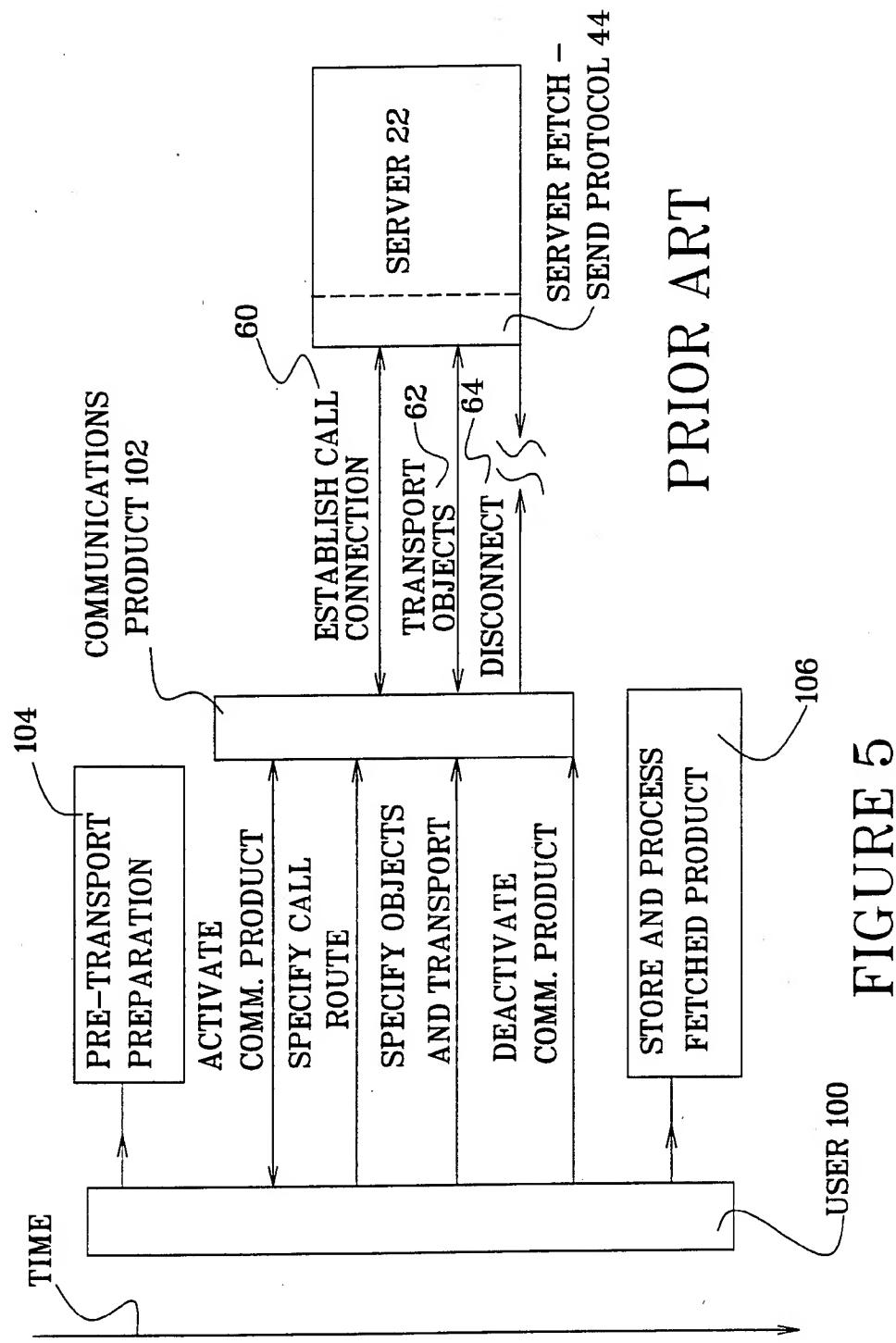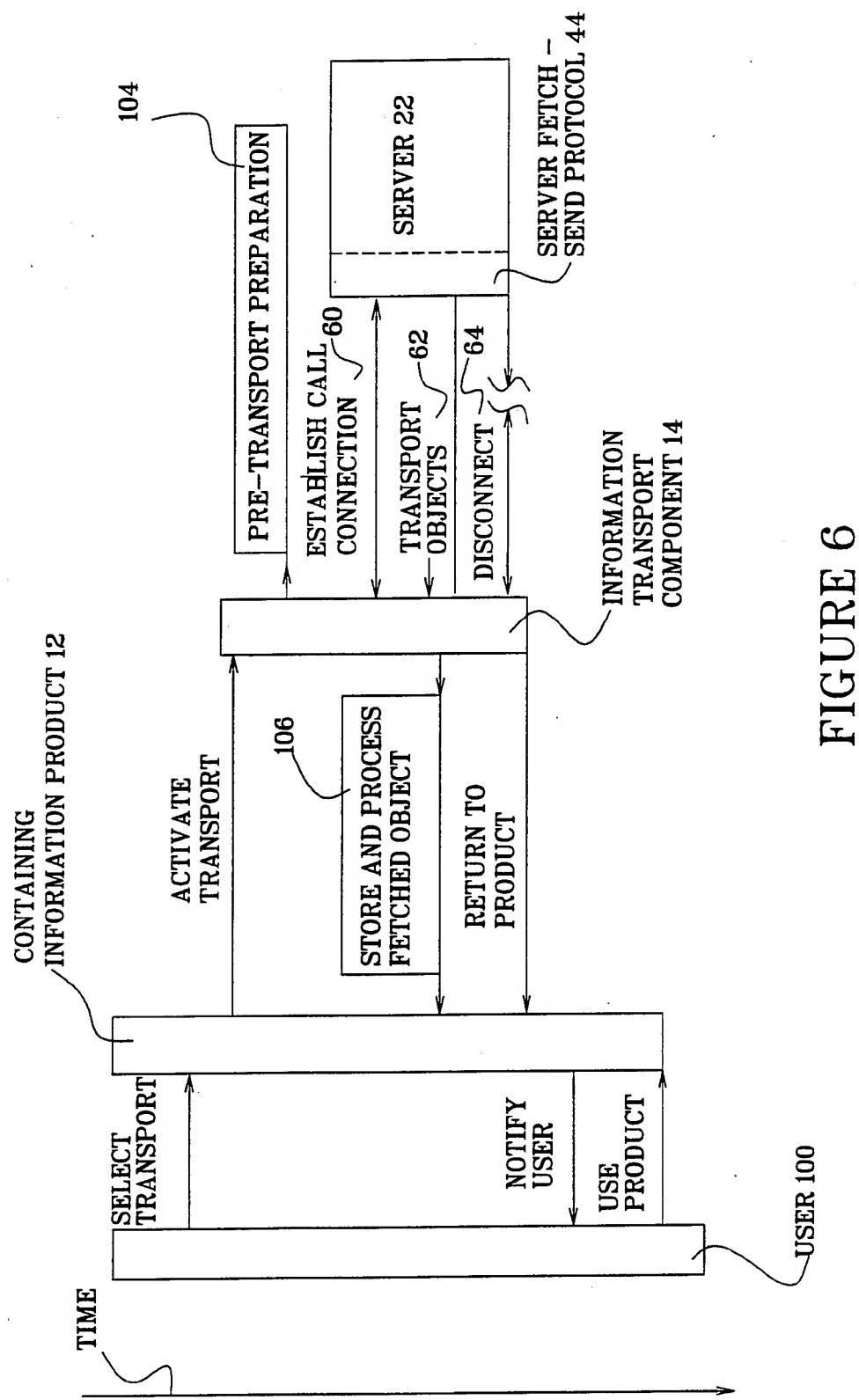
FIGURE 5

FIGURE 6

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US95/06399

A.	CLASSIFICATION OF SUBJECT MATTER

IPC(6)   :G06F 9/455
US CL   :395/500, 575،

According to International Patent Classification (IPC) or to both national classification and IPC

B.	FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 395/500, 575

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

IEEE COMPUTER MAGAZINE
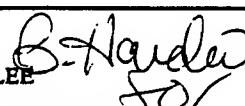
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

APS, PROQUEST

C.	DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	The FRYE Utilities for Networks, "Software Update and Distribution System" Manual, 1992, published by Frye Computer Systems, Inc., pages 1-185	1-50

☐ Further documents are listed in the continuation of Box C.   ☐ See patent family annex.

*	Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be part of particular relevance		
"E"	earlier document published on or after the international filing date	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O"	document referring to an oral disclosure, use, exhibition or other means		
"P"	document published prior to the international filing date but later than the priority date claimed	"&"	document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
09 AUGUST 1995	25 SEP 1995

Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231	Authorized officer
	THOMAS C LEE
Facsimile No. (703) 305-3230	Telephone No. (703) 305-9717

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